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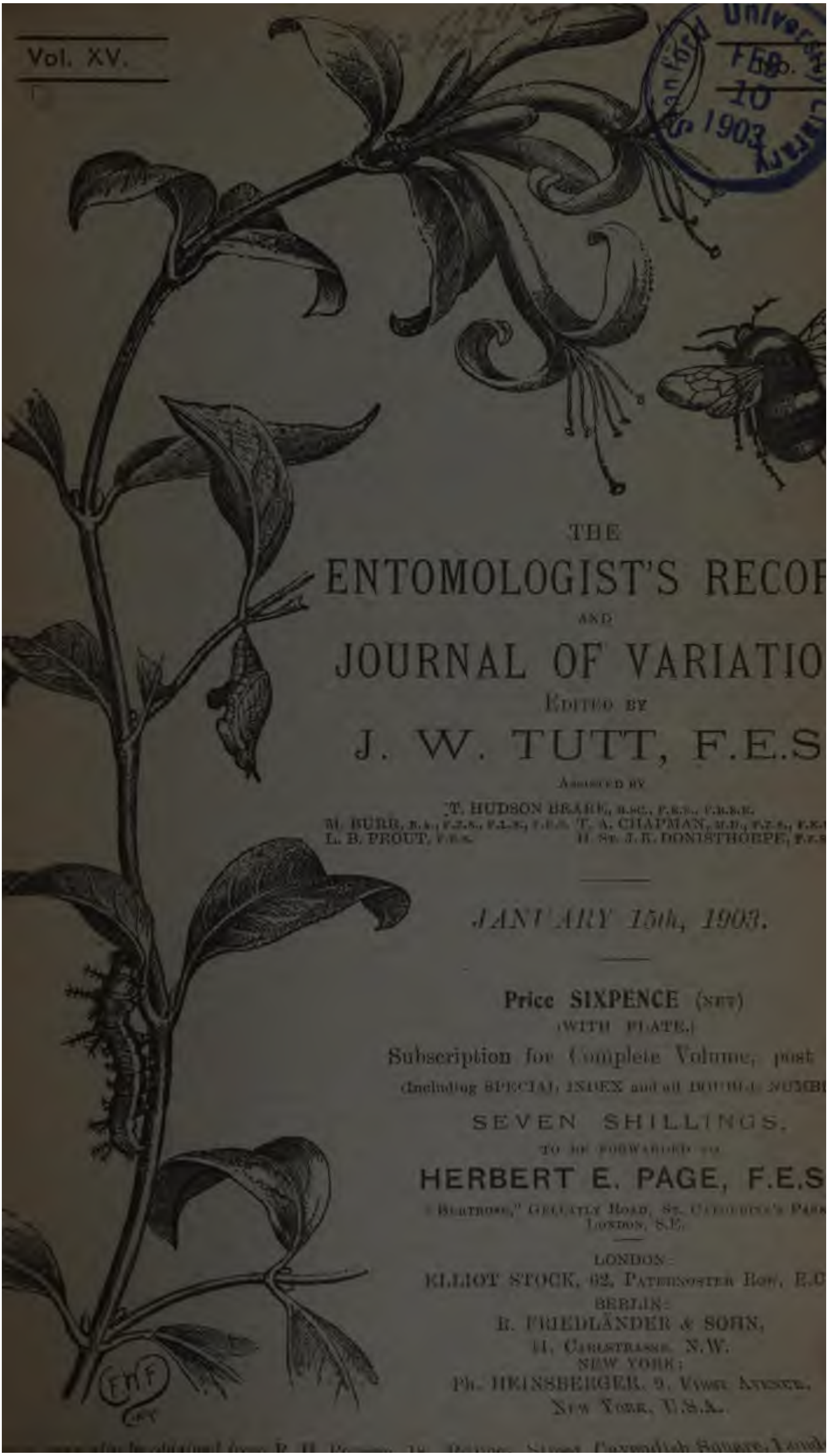

THE
ENTOMOLOGIST'S RECOR
AND
JOURNAL OF VARIATIO

EDITED BY
J. W. TUTT, F.E.S

ASSISTED BY
T. HUDSON BEARE, B.SC., F.E.S., F.R.S.E.
M. BURR, B.A., F.Z.S., F.L.S., F.E.S. T. A. CHAPMAN, M.D., F.Z.S., F.E.
L. B. PROUT, F.E.S. H. St. J. K. DONISTHORPE, F.Z.S

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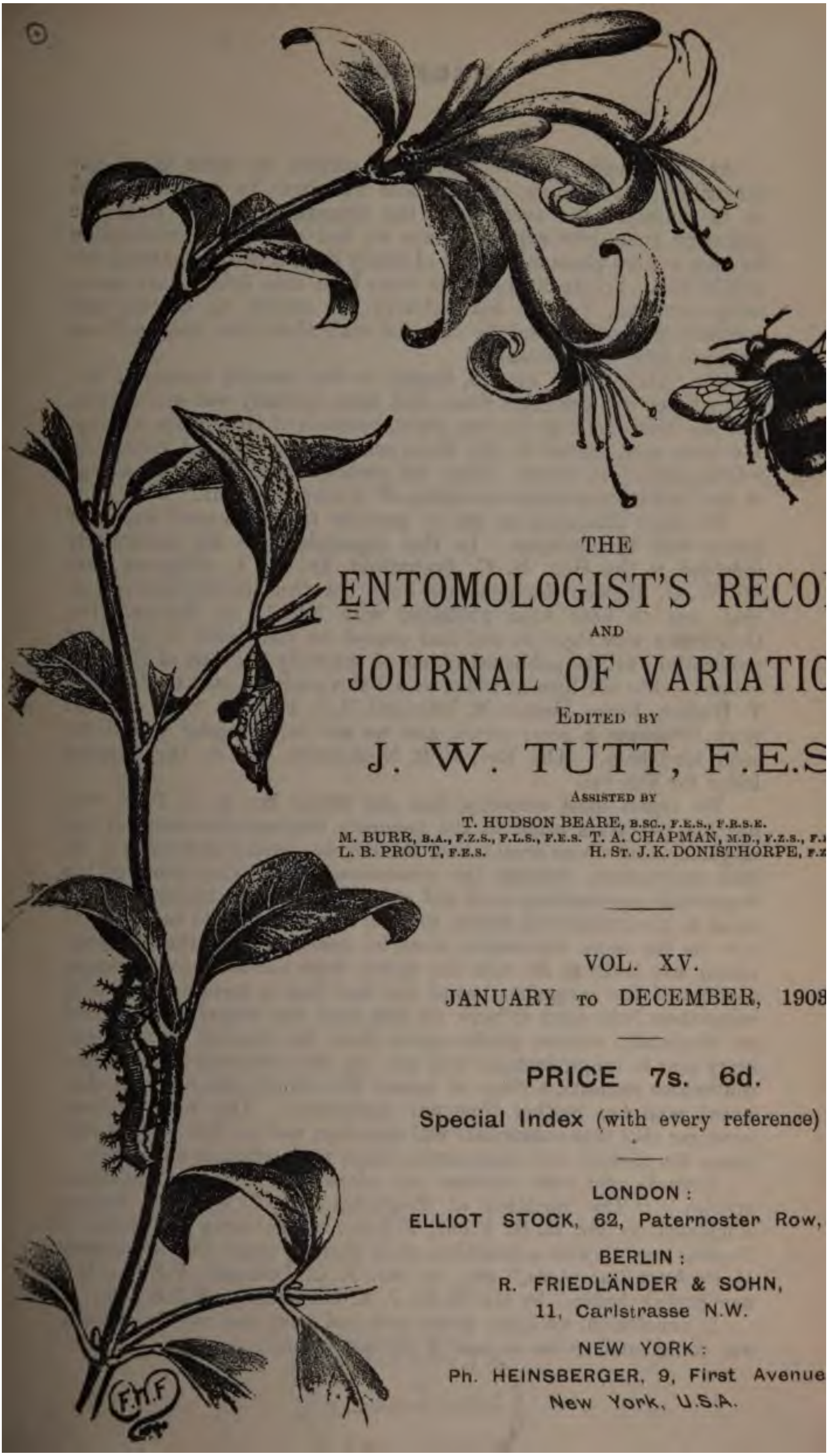

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PREFACE.

At the completion of our fifteenth volume we again thank our subscribers, contributors, and all those who have in any way helped us to maintain the success of the magazine. Never since the magazine came into existence have we had a stronger subscription list, nor a more generous supply of really good scientific material for publication. So plentiful has the latter been that delays have necessarily occurred, but we have cleared off arrears as quickly and regularly as possible, and the editorial staff alone has really suffered owing to delay in publication.

Our "Coleoptera" section, thanks to the untiring energy of Mr. Donisthorpe and Professor Beare, has been specially well maintained, and Mr. Burr has kept the less popular section of Orthoptera moving. We have now, thanks to Mr. Burr, considerable material relative to "Orthoptera" in hand. That the contributions to our knowledge of the Lepidoptera shows no falling off is amply evident.

We have attempted as far as possible to give a good supply of plates with this volume. In this department we are particularly indebted to the Hon. N. C. Rothschild, Dr. T. A. Chapman, and Mr. W. G. Sheldon, for generous help. A three-colour photograph that was to have been published with No. 12 to illustrate Dr. Chapman's new Psychid, and that cannot be completed in time for publication, will be published in one of the early numbers of the next volume. For our Special Index we are this year indebted to Professor T. Hudson Beare, Messrs. M. Burr and H. J. Turner. Such detailed work is always a great strain, and we are very grateful indeed for such kind help. The Rev. C. R. N. Burrows will do the General Index for Vol. xvi.

We regret most sincerely that our friend Mr. H. E. Page, who has for ten years acted as the honorary business treasurer for the magazine, and whose great labour has largely enabled us to carry it on, feels constrained, through the continuously increasing work of his department encroaching more and more on the time necessary to be given to his professional duties, to hand over the work to another. It is to us the more regrettable, since he considers that the increased labour has little to do with the actual work necessary to the proper conduct of the magazine, but to the fact that a certain number of subscribers (who seem to have no idea that the magazine is carried on absolutely without profit—more than the receipts being spent every year in its production) will not pay their subscriptions without continuous requests, a class of labour for which, as a rule, a professional man has neither time nor inclination. Our new business treasurer asks that subscribers will treat him well in this respect and lessen the clerical work (necessarily large) to an efficient minimum.

Towards our next volume we already have many important articles. "The variation of *Triphaena comes*" is to be further elucidated by Mr. L. B. Prout, F.E.S.; "The larva and pupa of *Daphnis nerii*" (with a first-class plate thereof) and "The life-history of *Pachetra leucophaea*," etc., by Mr. J. C. Dollman, F.E.S.; "A new British beetle," by Mr. H. St. J. K. Donisthorpe, F.Z.S., etc.

In conclusion, we again thank each and every one who has in any way contributed to the success of the last volume.

Leland Stanford, Jr.

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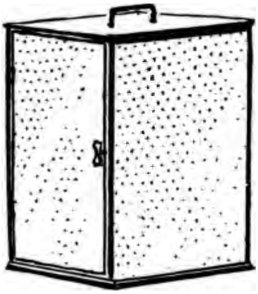
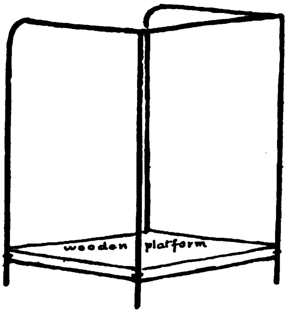
Fig 1. Wire gauze meat safe. Fig.2. Wire frame.





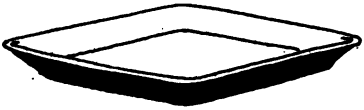
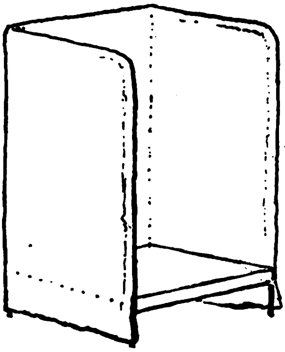


Fig 3. Tin baking dish to hold water.



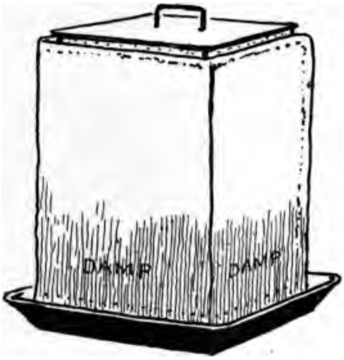


Fig. 4. Wire frame covered. Fig. 5. Breeding cage complete.

BREEDING-CAGE.

The Entomologist's Record

AND

JOURNAL OF VARIATION.

VOL. XV. No. 1. JANUARY 15TH, 1903.

Retrospect of a Coleopterist for 1902.

By Professor T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S.

In my retrospect for 1901, I had to deplore the fact that the year had been singularly unfruitful in additions to our catalogue, though several doubtful points had been cleared up; on the other hand, 1902 has seen quite an outburst of activity, and we have added no less than nine genuine species to our lists, and several previously unnoted varieties. I propose to deal with these additions first, several of which are remarkable and quite unexpected, especially so in the case of the Irish records. LÆMOSTENUS COMPLANATUS, Dej.—This insect was introduced by Mr. S. W. Kemp (*Ent. Mo. Mag.*, vol. xxxviii., p. 216), on the authority of specimens taken near Dublin in June. The publication of this record at once elicited others. The insect had existed for some time in our collections, being confused with *P. terricola*, Herbst. It has been taken at Plymouth by Mr. Keys, at Woolwich by Mr. Bedwell, at Chatham by Mr. J. J. Walker, and at Strood by the author. BEMBIDIUM ARGENTEOLUM, Ahr.—This addition was announced in a paper read before the Royal Irish Academy on June 24th, 1901, by the Rev. W. F. Johnson and Mr. J. N. Halbert. The paper has this year been republished as *A List of the Beetles of Ireland*, and was reviewed in our columns in September last (see p. 251). It appears that the beetle was first taken as far back as 1831, near Shane's Castle, on the northern shores of Lough Neagh, but was confused with *B. paludosum*. It is clear from the records by Mr. Kemp, Mr. Orr, and others, that it occurs all round Lough Neagh, wherever the shores form a suitable habitat. XANTHOLINUS CRIBRIPENNIS, Fauvel.—This was also brought forward for the first time in the above Irish list. It occurs in Donegal and Derry, and is very similar to *X. distans*, Kr.; in fact Canon Fowler suggests (*Ent. Mo. Mag.*, vol. xxxviii., p. 251) that it is not specifically distinct. It appears to me, however, that it has as clear a title to specific rank as many others which are admitted without hesitation. STENUS PALPOSUS, Zett. (ARGENTELLUS, Thoms.).—This is the last of the three additions due to our Irish friends. Like *B. argenteolum*, it occurs on the shores of Lough Neagh, a locality already remarkable as the only place, so far known, in which *Dyschirius obscurus* occurs in our islands. This insect is allied to *S. buphthalmus*, and appears to be rare on the Continent. QUEDIUS OBLITERATUS, Er.—Though Mr. Keys (*Ent. Mo. Mag.*, vol. xxxviii., p. 147) only claims that he has confirmed this insect as British, it is, in fact, a genuine addition to our catalogue, as it has never before appeared in our lists, the only reference to its occurrence being in a paper by Mr. Wollaston on "The Coleoptera of the South of Ireland" (*Zoologist*, 1847, pp. 1570-6), and, in spite of this, it does not find a place in the recent Irish list. Mr. Keys' note did not make it quite clear whether he was of opinion that *Q. suturalis*, Kies, was to be displaced from our lists, but there is no doubt this is not the case. There are undoubted specimens of *Q. suturalis* in our collections; it is easily separable by the much coarser punctuation of the elytra. On the other hand, there are probably many of the exponents of *Q. suturalis* standing wrongly under that name. They should be placed under *Q. obliteratus*, which appears to be commoner in this country than *Q. suturalis*. The little division of *Quedius*, to which *fumatus*, *maurorufus*, *suturalis*, *umbrinus*, and *obliteratus* belong, is admittedly a very difficult one, and I am not inclined to place the slightest reliance on mere colour distinctions. The decisive character seems to be the nature and amount of the punctuation of the elytra. DIASTICTICUS VULNERATUS, Sturm.—This most interesting addition to our *Aphodiidae* was taken by Mr. C. Morley, near Brandon, last June, under a flint lying on the heather, and was determined by Mr. E. A. Newbery (*Ent. Mo. Mag.*, vol. xxxviii., p. 253). Of the small allied species it most resembles superficially *O. porcatus*, F., but is abundantly distinct. GYNANDROPHTHALMA AFFINIS, Hellw.—Canon Fowler (*Ent. Mo. Mag.*, vol. xxxviii., p. 281) records the capture of this addition to our *Clythrinae* by Mr. W. Holland, in June, 1899, in Oxfordshire. As the insect is so very unlike any other beetle of our fauna, it is a pity it was allowed to remain so long undetermined. No doubt careful search will be made in this locality next summer to see if further specimens can be obtained. DIBOLIA CYNOGLOSSI, Koch.—Mr. Donisthorpe captured a short series near Pevensey on August 11th (*Ent. Record*, vol. xiv., p. 265). Though, strictly speaking, this is only a reinstatement (as it appeared in our lists up to 1866), still it is practically an addition, for the old records were very untrustworthy. Rye says (*Ent. Ann.*, 1868, p. 76): "It occurs in our catalogue, though with *much doubt*," and Canon Fowler (*British Coleoptera*, vol. iv., p. 340) says, "It was probably on an obscure specimen of this species (*Longitarsus 4-guttatus*) that *Dibolia cynoglossi* was erroneously introduced into the British list. COCCINELLA 11-PUNCTATA var. CONFLUENS, Donis.—This new variety, named by Mr. Donisthorpe (*Ent. Record*, vol. xiv., p. 99), has been taken freely in Ireland, on the Galway and Kerry coast sandhills. QUEDIUS CRUENTUS var. VIRENS, Rottbg.—Attention was drawn to this in the Irish list, and Mr. Donisthorpe (*Ent. Record*, vol. xiv., p. 297) gives further localities.

In addition to these genuine additions there are records of introduced species to which it is desirable to draw attention. Mr. Champion (*Ent. Mo. Mag.*, vol. xxxviii., p. 88) records *Cryptophilus integer*, Heer, a member of the *Telmatophilidae* from a London warehouse; and Mr. Newbery records (*Ent. Record*, vol. xiv., p. 338) *Tropideres hilaris*, Fahrs., from a wholesale druggist's in the city of London; and Mr. Burgess-Sopp (*Ent. Mo. Mag.*, vol. xxxviii., p. 9) states that *Trigonogenus globulum* is apparently spreading, as it has now been taken at Hoylake, Cheshire, in a chemist's shop. It occurs freely now in the Oldham mills.

In regard to special papers on obscure genera in our lists, the most admirable piece of work published this year has been Mr. Newbery's revision of *Bagous*, printed in the June number of *The Entomologist's Record* (xiv., p. 149). This paper it may be fairly said has straightened out a crooked path, and made possible the identification of captures in this genus in a way not previously possible except on the part of those who have access to continental collections and works of reference. It is, however, interesting to note that Mr. Edwards (*Ent. Mo. Mag.*, xxxviii., p. 240) claims that *Bagous lutosus*, Gyll. (which Mr. Newbery omitted in his paper on the ground that neither he nor Mr. Champion had been able to find an authentic specimen (*Ent. Mo. Mag.*, xxxiv., p. 52)), is a genuine British insect, he having taken an example in August, 1890, at Wretham Heath, Norfolk. I only mention this as an illustration of the difficulty of coming to any final conclusion when writing a memoir on such a difficult genus as *Bagous*, when, owing to their retiring habits, the species must be, and, as a matter of fact are, frequently passed over; even if captured, the confusion into which the nomenclature of the genus had fallen was enough to deter any one from attempting to identify and record their captures. As a result of Mr. Newbery's paper, the following changes were made in our catalogue in this genus. The species called *frit*, on p. 240 of vol. v, of Canon Fowler's work, is split up (see also *Ent. Mo. Mag.*, xxvii., p. 81) into *B. frit*, Hbst. (= *B. subcarinatus*, Gyll.), and *B. claudicans*, Boh. There are also two new varieties, one of which, I regret to say Mr. Newbery has not named; these are *B. tempestivus* var. *heasleri*, and *B. glabrirostris* var. ?

The cold sunless summer and late spring would have been sufficient reason for scanty records of the capture of rarities, but, on the contrary, the records are well above the average, and a few are worth drawing attention to. *Tachys parvulus*, Dej., long a doubtful species in our list, has been taken now at such widely separate points as Woking, Lyndhurst, Cornwall, and Lancashire; *Lyctus brunneus*, Steph., has been found at Hanwell, in an old post; *Ceuthorhynchidius mixtus*, Muls. and Rey, at Woking; *Gnorimus nobilis*, L., at Towcester and Ealing; *Lytta vesicatoria*, L., at Bradfield, and in plenty at Dover and Newmarket, in June; *Cetonia floricola*, Hbst., and *Pogonocherus fasciculatus*, De G., at Rannoch; *Rhizotrogus ochraceus*, Knoch, in Cornwall, an interesting record, as it has not been taken for a good many years; *Anchomenus 4-punctatus*, De G., *Odontaeus mobilicornis*, F., and *Pissodes notatus*, F., all at Woking; *Prionocyphon serricornis*, Müll., in Epping Forest; *Acilius canaliculatus*, Nic., in Berwickshire; *Meloe rugosus*, Marsh., at Broadstairs and Weymouth; *Saperda scalaris*, L., in Derbyshire and Cumberland; *Otiorhyncus ligustici*, L., at Matlock; *Cryphalus fagi*, Fab., in Surrey and Sussex; *Hydroporus ferrugineus*, Steph., *Philonthus scutatus*, Er., *Placusa complanata*, Er., and *Hydrothassa hannoverana*, F., all in Cumberland; *Hydrocatus clypealis*, Sharp, in the Isle of Wight; *Longitarsus anchusae*, Pk., from Peebles; *Perileptus areolatus*, Creutz, *Elater pomonae*, Steph., and *Hylecoetus dermestoides*, F., all additions to the Irish list due to Messrs. Donisthorpe and Bouskell; *Aegialia rufa* in great abundance on the Birkdale sandhills; *Malachius marginellus*, Ol., at Peebles; the second capture in Scotland; *Larinus carlinae*, Ol., at Rye; *Mantura chrysanthemi*, Koch, *Ammoecius brevis*, Er., *Gymnetron collinus*, Gyll., and *G. linariae*, Panz., all from the Southport district; these, with many others, show that the year has been a fairly prolific one for coleopterists.

In regard to life-histories and other problems which can only be solved by experiment or careful observation in the field, the year has been only fairly fruitful. In the *Ent. Mo. Mag.* there have been notes (p. 181) by Mr. J. Edwards on the pairing of *Homalota liturata*, Steph., and on the probable use of the greatly thickened femora and corresponding tibial spines in the males of *Osphya bipunctata*, Fabr. It has been suggested that this development was for the purpose of enabling these insects to retain a firm hold of the leaves or branches of the hawthorn, but Mr. Edwards states, and my own experience in collecting this insect corroborates his view, that he has not found them difficult to dislodge. There can, I think, be but little doubt that these male characters are to facilitate sexual intercourse. We find a similar state of things in the sculpture of the elytra of the female *Dytiscus*, &c. Mr. Edwards' locality (East Gloucestershire) is a new district for *Osphya*, which is now known to occur in Huntingdon, Kent, and Gloucestershire. Other similar notes in that journal are those by Mr. E. Saunders (p. 242) on "Antennal Movements in a Decapitated Stag-beetle," and by Mr. C. Morley (p. 249) on "Field Notes on Stridulation." In the *Ent. Record* (p. 100) is a note by Mr. Donisthorpe on "The Changes of Colour during Life of a *Cassida* (*Coptocycla bistripunctata*, Herbst)." Professor Poulton suggests, as an explanation of this curious effect, the variation in the thickness of the fluid layers between the chitinous lamellæ of the elytra, owing to changes of pressure, brought about by expansion and contraction of the body. Another note by the same author (p. 185) deals with some further proofs of protective resemblance of such insects as *Limobius mixtus*, Boh., and *Hypera punctata*, F., to their environment. Mr. Burgess Sopp (p. 239), who has been rearing that beautiful insect, *Chrysomela cerealis*, L., draws attention to the fact that though their brilliant colour makes them such conspicuous objects against the white background of the drawer of a cabinet, yet when amongst their foodplant, the wild thyme, they are singularly difficult to find. I suspect that critics of the theory of protective resemblance are too often misled by founding their objections on the appearance of dead insects in a cabinet. There is a total difference, for instance, between the appearance of such insects as the British species of *Pogonocherus* as seen in a cabinet and as seen on the mossy bark of tree-trunks and stems. In the former case they are perfectly conspicuous and clear, in the latter they become almost invisible, and such brilliantly coloured insects as *Chrysomela graminis*, L., for example, are not at all readily seen when on their foodplants in their native haunts. In the same magazine occurs a very interesting note by Dr. Chaster, on "The Habits of *Aegialia rufa*, F." Owing to the extraordinary abundance on the Birkdale sandhills of this normally scarce insect, Dr. Chaster was able to make a series of very striking observations on the assembling of this insect, probably for the purpose of reproduction, and notes of this character throw a good deal of light upon the distribution, and reasons for the apparent rarity of many of our scarcer insects. Mr. Tutt, in continuation of his previous notes, has published further valuable papers on "The Migration and Dispersal of Coleoptera" (p. 73), and has finally summed up the conclusions which may safely be drawn from the observations so far recorded in the three papers published on pages 262, 292, and 315. A most valuable local list, to which attention has already been drawn, has appeared this year—*viz.*, " A List of the Beetles of Ireland," by the Rev. W. F. Johnson and Mr. J. N. Halbert. This is a bulky publication, extending to 293 pages, and is a model of what such lists should be. In a carefully-written introduction the authors discuss the main problems which arise in trying to formulate theories as to the origin of the present beetle fauna of Ireland; then follows a most complete and useful bibliography and an outline map. The list proper follows the line of those by Mr. C. Morley, Mr. J. J. Walker, and others, that is, not only are localities mentioned, but also, in most cases, much information is given as to the habitats, the mode of life, and the time of occurrence of the various species. Personally, I have already found these additional notes of great use; for example, a character is given for separating *Xantholinus linearis*, Ol. and *X. longiventris*, Heer, worth all the other characters put together, and yet, singularly enough, not mentioned by most authors. The *Transactions of the Entomological Society of London* during the past year contain, in addition to the admirable address of the President, several other papers of exceptional importance. Mr. Donisthorpe has contributed an excellent memoir, " The Life History of *Clythra 4-punctata*, L.," in which all the information previously published has been brought together, and, to this, the author has added a considerable number of valuable original observations, especially in regard to the egg stage. Mr. Champion, in " An Entomological Excursion to Central Spain," gives both an interesting account of the visit paid by him and Dr. Chapman in the summer of 1901 to that country, and also a complete list of their captures in Coleoptera and Hemiptera-Heteroptera. Lastly, in Part iii, which has been issued this month to members, we have, at length, in full, the paper dealing with " the Bionomics of South African Insects," which was contributed by Mr. G. A. K. Marshall and Professor Poulton. As this paper extends to nearly 300 pages, and is one mass of experiments and deductions drawn from them, it is quite impossible to criticise it in this summary, even if I had been able in the brief time it has been in my hands, to read it completely once through. I have no hesitation in affirming that it points to South Africa as the country which will in all probability furnish the necessary material for settling some of the most difficult problems now confronting biologists, and many theories will either find their confirmation or their overthrow in the results deduced from experimental work in South Africa on the lines of that of Mr. Marshall. In the *Ent. Mo. Mag.*, vol. xxxviii., p. 61, Dr. Sharp describes some new species of oriental *Limnichini* (fam. *Byrrhidae*), and, in doing so, he points out the extreme similarity of the Oriental forms to those from the New World.

On the whole it has been a stimulating year to those anxious to see a real scientific study of our beetle fauna, and the appearance in one year of an English translation of Fabre's " Souvenirs of Insect Life " and of the above paper, " Bionomics of South African Insects " must most surely do something to turn our young workers from mere collectors into observers and experimenters.

Retrospect of an Orthopterist for 1902.

By MALCOLM BURR, B.A., F.L.S., F.E.S.

The orthopterist finds but little of note to mark the year in looking back through the past twelve months. The most striking, or, indeed, the only, event of interest in connection with our own fauna, is the rediscovery of *Labidura riparia*, Pall., the giant earwig. It is recorded by Mr. Lucas in the pages of *The Entomologist*, Miss Nellie Robertson took it in July at Bournemouth, and Major Robertson records the capture of several (*Ent. Rec.*, xiv., p. 346); this is apparently its favourite region; all our old records are for the southern counties, most of them for the Hampshire coast. It is a cosmopolitan insect, and so variable, that entomologists never agree as to how many races or varieties there are, or whether they all are one species or several. It seems to be indigenous to the Palæarctic region, and is almost invariably found on the sea-shore or on river-banks. In this country it is probably a truly native species, as it is always found under natural conditions, instead of half-domesticated and dependent on artificial warmth like the equally cosmopolitan *Anisolabis annulipes*, Luc., and *Apterygida arachidis*, Yers. Careful search will probably eventually prove its existence on other parts of our south coast.

More than the usual number of exotic species have straggled to our shores during the past year. *Agroecia vittipes*, Redt., a Brazilian grasshopper, and two cockroaches, *Stylopyga decorata*, Brunner, and *Panchlora exoleta*, Klug, have all been noted in this magazine. The two last are recorded by Mr. Eland Shaw, M.R.C.S. We hope the year may be signalised by the return to his favourite order of this entomologist whose synopsis of more than ten years ago did so much to stimulate the study of orthoptera in Great Britain.

Among publications, the most striking is the appearance of a proposed totally new system of the Dermaptera, by Verhoeff. The assiduous German author, after an examination of the material in the Berlin Museum, launched in the *Zoologischer Anzeiger*, an entirely revolutionary paper, which was, unfortunately, somewhat prematurely given to the world, as not all the genera have been dealt with. The first memoir was followed by a brief article dealing with some further genera, and more has been promised. Orthopterists must, however, regret that the author has not more carefully matured his observations. Many new species and several new genera are described briefly, and in German. The species are mainly African, and apparently rare; and, as the types are in the Berlin Museum, it is to be regretted that no illustrations are given. Some of the genera may be unable to stand the strain of future examination, but, in spite of all drawbacks, it is a step in the right direction, and any change is to be welcomed that is an improvement upon the accepted but antiquated arrangement.

As a curiosity, we may mention the blind earwig, *Anisolabis caeca*, described by Borelli, from the Argentine Republic. It is very closely allied to the universal *A. annulipes*, Luc., but no vestiges of eyes can be seen.

Among systematic works, Hancock's "Tettigidæ of North America" is deserving of mention. It is an important faunistic monograph that is also of purely systematic value. It has been noticed in these pages (*antea*, 1902, p. 230).

A Breeding Cage (*with plate*).

By J. C. DOLLMAN.

The five figures sketched in the illustration to this subject, represent the component parts of a breeding-cage, which the writer, after over a year's trial, can recommend on the score of its simplicity, economy of construction, and efficiency of service. Fig. 1 is an ordinary wire gauze meat-safe with tin back, top and bottom; the front and sides being covered with the gauze. The hook provided inside can be removed. This item can be purchased for about six shillings at the size of 24 inches in height; the back and top, inside, should be rubbed with earth, or have some fabric stuck to them to facilitate the hold of the insects when climbing to develop their wings. Fig. 2, represents a framework of stout wire rod, about the substance of a slate pencil. This is made one inch larger in width and depth than the cage, and the legs should extend a couple of inches below the wooden platform. This platform, on which the cage is to stand, can be firmly held in position by wire staples round the legs, being well hammered home. Fig. 3 is a common tin baking-dish, and should be large enough for the four legs of the frame to stand comfortably upon its flat bottom. Fig. 4 shows the frame covered on the front and sides. This covering may be either old flannel or a double thickness of stout serge, or any material which will readily absorb, and hold, water. The material employed should be allowed to come to the full length of the legs and to hang below the platform, so that it will rest upon the bottom of the tin dish. Fig. 5 gives the apparatus in position. Fill the baking-dish two-thirds full of water and stand the covered frame in it, seeing that the bottom edge of its coverings is well down in the water to the bottom of the dish. The breeding-cage can now be placed on the platform, and should have an inch of space left all round between it and the covering of the frame. The strong recommendation which this apparatus has is this—the water absorbed by the flannel, to about one-third of its height, keeps the atmosphere damp in and round the cage, while the open space allowed by the extra inch permits the air to circulate freely and freshly. The result of this is that, while the atmosphere of the cage is damp, there is no possibility of producing mildew. There is no wetting of earth, moss, sand, or whatever material the pupæ may be stored in or upon, and the conditions are possibly as near an approach to natural ones as can be arrived at. The percentage of cripples emerging is almost nil, and there is no anxiety as to whether this or that species wants damping, as one glance at the flannel covering will tell one whether the dish requires more water or not. The entire concern being very compact it can be easily removed from one room to another, according as the question of temperature has to be considered.

A few Orthoptera from Switzerland.

By MALCOLM BURR, B.A., F.L.S., F.E.S.

During a short holiday in Switzerland, in September last, I picked up a few orthoptera in the neighbourhood of Caux, above Montreux. The locality is doubtless well-known to many readers of the *Entomologist's Record*. We were staying at Caux, a village consisting chiefly of two hotels, at an elevation of 1100 mètres. It is a grand spot, commanding a splendid view of Lac Leman, the Rhone valley, the

Savoy Alps, and the Dent du Midi. Behind Caux the road runs along the side of the hills to Les Avants. On the meadows and among the thickets that grow on the slopes by this road, I found *Stenobothrus parallelus*, Zett., and *S. viridulus*, L., very common. *S. lineatus*, Panz., was there, but less common, I found a single *Psophus stridulus*, L., conspicuous in his deep black colour and crimson wings; one *Stethophyma fuscum*, L., attracted attention to itself by its conspicuous coloration, and curious rattling flight. Its advertisement of its presence was fatal to it, as I soon had him in my bottle, but I remember that, when I first made the acquaintance of the species, ten years ago, in the Savoy Alps, above Aix-les-Bains, I was terrified by the rattling clatter that it made in flight, and could only just screw up my courage enough to let curiosity overcome timidity. I found *Platycleis roesalii*, Hagenb., but not numerous. Our old friends *Thamnotrizon cinereus*, L., and *Platycleis grisea*, Fabr., was common enough, and so was *Locusta cantans*, which kept up a continual chorus in the grounds of the hotel itself. *Chrysochraon brachypterus*, Ocsk., was abundant on the grassy slopes. It is a pity that this beautiful little grasshopper so quickly loses its brilliant emerald-green colour and fades to a dirty brown. In orthoptera, the tender and delicate greens can be kept with a little care, but the more metallic or oily greens fade in spite of everything. The two species of *Chrysochraon*, and the various *Podisma*, when dried and faded in the cabinet are very different from the brilliant and glittering insects that we find in their native haunts. *Podisma alpinum*, Koll., was also common a little above Caux, in the woods especially. I took a single *Stenobothrus vagans* lower down in the valley. *Decticus verrucivorus*, L., was, of course, to be found nearly everywhere.

As we went higher, we found new forms. At Jaman, and again in the dells round the Rochers de Naye, at about 2000 mètres, I found *Gomphocerus sibiricus*, L., in numbers, and two species that I had not previously seen alive. One was *Platycleis saussureana*, Frey, a species closely allied to our English *P. brachyptera*; it is common enough in the grassy uplands of Central Europe. The other was *Orphania denticauda*, Charp., a great clumsy, fat, smooth, green, apterous Phaneropterid; our only English member of the family, *Leptophyes punctatissima*, Bosc., gives a very poor idea of its big relation. It was common enough chirping in the long grass, and very easy to pick up with the fingers. It is a very widely distributed species. It occurs in the Pyrenees, all through the Alps and the Tirol, in the hills near Budapest, in the southern spur of the Carpathians and in the mountains of Servia and Transsylvania, and down the Dalmatian coast as far as Castellastua. It is strange that I had never actually seen it before, but I have probably been too early in the season. In the late summer, at Tübingen, Dr. Krauss once told me, they are so common along the railway bank that their chirp can be heard even in passing trains.

Notes on Abraxas grossulariata and how to rear it.

By (Rev.) G. H. RAYNOR, M.A.

(*Concluded from p.* 325.)

The exceptionally small size of this latter specimen (*anteà*, xiv., p. 325) *is undoubtedly* due to the fact that it comes of a race which has been considerably inbred. To my mind, size is a very important point in this species. In undersized specimens the colours are often faint or bleached, and such insects seem to me of very little interest or value. Many of the aberrations that have from time to time been figured by different authors are deficient in size and, therefore, unless very extraordinary, seem to me to have been hardly worthy of such counterfeit presentment. I have not had the opportunity of seeing Oberthür's vol. xxi of the *Etudes d'Entomologie*, entitled "Variation des Lépidoptères," but I believe that he therein figures some 200 aberrations or varieties of *A. grossulariata*, mostly of British origin. Barrett, in his work, represents 19; and Mosley, in the earlier numbers of *The Naturalist's Journal* for 1895, has 29 excellent woodcuts, yet to none of these 250 aberrations have the authors assigned varietal names. So far as I can ascertain, only two (or at most three) British aberrations have so far ever been named, *viz.*, ab. *lutea* by Cockerell, ab. *varleyata* by Porritt, and, perhaps, ab. *flavofasciata* by Huene (*Stett. Ent. Zeit.*, 1901, p. 158; *Berl. Ent. Zeits.*, 1901, pl. vi., fig. 10). I, therefore, deem this a fitting opportunity for describing and naming a few of the more prominent and easily defined forms. There are many most beautiful forms in which the markings on the forewings are so complex as to baffle description; others in which the hindwings display most extraordinary markings, but, as similarly marked hindwings may occur in specimens with dissimilar forewings, I have not thought fit to differentiate aberrations merely by the markings on the hindwings. Barrett justly says, regarding this species, that "to describe all the results of the constant rearing of specimens for many years would tax the energies of the most laborious and diffuse writer." I will, therefore, at once proceed to describe certain striking aberrations, and to assign names to all except the two which have already been called *lutea* and *varleyata*. The following is a tabular list of the aberrations of *A. grossulariata*:—

A. PALE ABERRATIONS.—α. ab. *candida*, mihi.—I have never seen this form, which is figured by S. L. Mosley in the *Naturalists' Journal* for February, 1895, p. 33, fig. 1. In the text Mosley says, "Fig. 1 is entirely white, without any black at all. I have only seen two—one in Mr. Gregson's collection (now Webb's), and the other in the late J. Sidebotham's, of Bowdon."

β. ab. *lacticolor*, mihi.—This being a well-known form, recurrent in Lancs., seems to merit a full description. Ground-colour of all wings pale creamy: black markings very much reduced. A small black basal blotch on forewings, and three similar equidistant blotches along costal margin, the first touching the yellow basal blotch and the third situate at the top of the pale yellow median transverse band. Discoidal spot (black) well-developed, and, in the pale area below it, are three or four other minute black specks. The series of black spots inside the yellow median band forms a broken stripe; the outer series along the same are faint and wedge-shaped. The usual seven spots along the hindmargin are small but distinct, as they are also along the hindmargin of the hindwings. Otherwise, the hindwings have no markings but a minute black central spot, and, below it, seven very faint black dots stretching obliquely from near the apex to a point rather below the centre of the inner margin. There is also a single small black spot at the centre of the inner margin. Expanse, 1¾in. Always ♀. Localities—Lancs., Sussex (Arlington). This form is figured on p. 99, column 1, of Newman's *British Moths*. Miss E. Miller has shown me two ♀ examples of this aberration, bred in 1902, from larvæ taken wild on blackthorn, at Chelmsford.

γ. ab. *chalcozona*, mihi.—Similar to β, but basal blotch and median band, instead of being pale yellow, are of a dead coppery-bronze, the median band being very broad and handsome. The hindwings of some specimens show a very faint yellow horizontal stripe starting from a point opposite the anus and extending over two-thirds of the wing towards the apex. Always ♀. Expanse, 2ins. Locality—Chiswick and *Lancs.*

δ. ab. axantha, mihi.—A form in which the yellow transverse bands on forewings are either obsolete or so washy and slight as to be hardly noticeable. I bred about a dozen of this pretty form from one lot of Nottinghamshire larvæ this year, and have also received it from Durham. The nearest figure to it in Barrett is fig. 1b on pl. cccxxi.

ε. ab. *lutea*, Cockerell, "Ent.," vol. xxii., 1889, p. 2.—Markings more or less normal, but all wings suffused with bright yellow. Localities—Essex, London District, Sussex (Angmering), and Lancs. Figured by Barrett, pl. cccxxii., fig. 1d.

ζ. ab. *fulvapicata*, mihi.—Markings more or less normal, but with the fulvous colour at top of the central median band extending over the pale area at apex of forewings. I have reared a considerable number of this form from Chiswick, Lancs. larvæ.

η. ab. *albomarginata*, mihi.—Markings normal, but the series of seven black spots usually found along hindmargin of forewings and hindwings entirely absent. Barrett, pl. cccxxii., fig. 1. ? Locality.

θ. ab. *melanozona*, mihi.—A very striking Scotch form. Forewings have a black blotch (with slightest trace of yellow) at base. Discoidal spot very black and large, situate in large white central area. On outside of this area and inside the very faint yellow median band is a black fascia, broader at costal margin. The series of black spots outside the yellow band is reduced to four, which nearly coalesce with the black fascia, and are, therefore, really situate in the yellow band. The seven black spots along the hindmargin are strongly developed and confluent. Hindwing with a well-defined central black spot and two parallel series of seven strongly-marked spots along the hindmargin, a definite white area separating the two series. Locality—Aberdeen.

B. Dark Aberrations.—ι. ab. *varleyata*, Porritt.—"Black markings amalgamated so as to form a complete uniform suffusion of the fore- and hindwings with black, except a pure white band across them all at some little distance from their base."—Barrett. Figured by Barrett, pl. cccxxii., fig. 1g, by Newman in *British Moths*, p. 100, column 1, and by Mosley in *Naturalists' Journal*, vol. iv., no. 31, Jan. 1895, p. 9. Mosley, *in loco citato*, says that "This form was first reared by Mr. Varley (at Huddersfield), in 1864, and figured in *The Naturalist* or that year. He reared eleven of this form, and sold them for £1 each. The same variety has since been bred in some numbers at Wibsey, near Bradford, and at other places. Several have also been taken at large."

κ. ab. *hazeleighensis*, mihi.—The whole area of the forewings between the two orange bands is filled in with brown-black, the only white markings in this area being two minute specks on the costal margin (about the middle). Median band of a deep orange, and broader where it meets the inner margin. A very striking form. Locality—Essex (Hazeleigh).

λ. ab. *nigrosparsata*, mihi.—Markings more or less normal, but all the wings suffused with minute black specks, producing a sooty appearance. Median band generally faint, and of a dull orange. Localities—Essex, Yorks, S. Wales. Barrett, pl. cccxxii., fig. 1f.

μ. ab. *subviolacea*, mihi.—Markings normal, but whole area of all four wings suffused with dusky or brownish-violet, often producing a scorched appearance. Barrett, pl. cccxxii., fig. 1c and pl. cccxxi., fig. 1f. Localities—Lancs., Notts.

ν. ab. *semiviolacea*, mihi.—Similar to μ, but hindwings not suffused with the dusky or brownish-violet. Locality—Kent (Bexley).

There are no aberrations named in Staudinger's *Catalog*, but there are two local varieties, which may, of course, occasionally crop up as aberrations. I have not come across either of these among the numerous British specimens (or illustrations of such) which I have seen, but it seems advisable to quote the descriptions here.

ξ. var. *ribesiata*, Stgr., "Iris," v., p. 161.—"Alis signaturis nigris obsoleticribus, maculis in fascia confluentibus. From Fergana in Central Asia" (Staudinger and Rebel, *Catalog*, p. 323).

ο. var. *conspurcata*, Butler, "Ill. Het.," iii., p. 48, pl. 52, fig. 11.—"Maculis nigris confluentibus, alis posticis area basali nigra. From Japan" (ibid).

The description of var. *ribesiata* seems too general to admit of easy identification, whilst var. *conspurcata* would certainly seem to be non-British, as none of our forms (known to me at any rate) have a black *basal area on the hindwings.*

Mr. E. A. Fitch, kindly supplies the following information :—*A. grossulariata* is moderately subject to parasites. Many species of *Ichneumonidae* and *Braconidae* have been recorded, but the more general parasites are the large black *Ichneumon trilineatus*, Gmel., a solitary parasite emerging from the lepidopterous pupa, and *Casinaria vidua*, Gr., whose larva spins a compact oval cocoon*, very like coarse brown paper, with a distinct black band towards each end. The irregularly-clustered, sulphur-yellow, woolly cocoons of *Apanteles rubripes*, Hal., and *A. glomeratus*, L., are well known. Several different species of *Mesochorus* (*Ichneumonidae*) are hyperparasitic on the *Casinaria*, or even on the *Apanteles*, or may be bred from the naked pupæ of the dipterous Tachinids. The most frequent dipterous parasite is the variable and common *Exorista vulgaris*, Fall.

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*This cocoon is figured in *Entomologist*, vol. xvii., pl. ii., fig. 11 (June 1884).

Further experiments with Myrmecophilous Coleoptera, etc.

By H. St. J. K. DONISTHORPE, F.Z.S., F.E.S.

In the *Entomologist's Record*, 1901, p. 349, I gave the results obtained in some experiments with Myrmecophilous Coleoptera, and I stated that I hoped to make further experiments in the future. The following are the experiments I have been able to carry out in 1902 :—

Atemeles paradoxus, Grav.—Mr. Keys, having kindly sent me a living specimen of this rare beetle which he had captured in a nest of *Formica fusca*, near Plymouth, I, on April 8th last, put several ants out of my observation-nest of *Formica rufa* into a small glass-topped box with the beetle. When it met an ant it exhibited the old defence, thrusting the tail, which it carried bent over the back, into the ant's face, and "twiddling" the antennæ very rapidly. The ant fell back, and the beetle was not attacked. When held by a leg with a pair of forceps to an ant, the ant refused to take hold of the beetle; when both beetle and ant were held, and the ant forced to seize the beetle, the ant immediately dropped it unhurt on being set free. I then introduced the beetle into my *F. rufa* nest, where it ran about amongst crowds of ants, using the old defence, and was not hurt.

Dinarda dentata, Grav.—The same results were obtained from similar experiments with this beetle, which was also sent to me alive by Mr. Keys, from a nest of *F. fusca*. It carried the tail down till it met an ant, when it bent it over its back and thrust it into the ant's face. When an ant was forced to seize it, the ant immediately dropped it, and ran round in a circle for some time. Introduced into the nest it ran about unhurt.

Blanjulus guttulatus, Gerv.—On April 19th, I introduced a specimen of this myrmecophilous myriapod, which I had taken in a nest of *F. rufa*, near Chobham, the day before, into my *F. rufa* nest. It was not attacked. When an ant was forced to hold it, which was not easy, it was dropped at once and the ant refused to touch it again, the same result was obtained with other ants. On holding the *Blanjulus* to my nose I was surprised to notice a strong smell similar to that given off by *Myrmedonia*. When let loose in the nest the creature entered the hillock unmolested. It is, therefore, evidently protected by the "Myrmedonia" smell. On April 25th I repeated the experiment with a specimen taken in a nest of *F. rufa* at Weybridge, with the same results.

Coccinella distincta, Fald.—On April 21st I introduced a specimen of this ladybird, which I had taken in a nest of *F. rufa*, at Pamber Forest, into my observation-nest. The ants were unable to seize it, its defence being to retract the legs and duck down, when the ant's jaws slip off its shiny elytra (see *Ent. Record*, 1900, p. 173). When an ant was forced to take hold of the beetle's leg, it let go at once. Another ant held on for some little time, dragging the beetle about. The ladybird remained motionless with all the other legs retracted and the yellow exudation which is excreted by the *Coccinellidae* was very apparent. The ant then let go and appeared to be very upset, walking round in circles, and was very languid for a long time afterwards. The beetle walked away unhurt. I repeated the experiment on April 25th, for Professor Beare to see, with specimens we had taken in the nests of *F. rufa*, at Weybridge. The same results were observed.

Atemeles emarginatus, Payk.—On April 25th I introduced into my observation-nest a specimen I had taken in a nest of *Formica fusca*, at Weybridge, after trying the other experiments, in small boxes, forcing an ant to seize the beetle, etc. Exactly the same results were obtained as with *A. paradoxus*, the beetle eventually entering the nest unhurt.

Leptacinus formicetorum, Mark.—On April 25th I introduced specimens from *F. rufa* nests, at Weybridge, into my nest. The beetles displayed the usual defence and also appeared to escape by reason of their small size. They all entered the nest unhurt.

Myrmetes piceus, Payk.—I also introduced this beetle from Weybridge. It was unmolested. It is too hard for the ants to bite, and when held and an ant forced to bite at it, the ant's jaws slip off its smooth body.

I may mention that the nest referred to above is a nest of *F. rufa*, which I obtained from Oxshott, on April 7th. On March 14th, I had dug up my old nest as no ants had appeared this year. I found the bulk of the ants and several queens in a ball all joined together by mould, which had probably killed them. There were no living ants, but the remains of many were scattered about the nest, the work, I am inclined to think, of the common wood-louse, of which there were great numbers alive in the nest. This recalls to mind Mr. W. W. Smith's note, in the *Ent. Mo. Mag.*, 1902, p. 132, on the displacement of ants by woodlice in New Zealand. I think the woodlice take the opportunity when the ants are hybernating to eat them; they are evidently obnoxious to the ants, as I have written in my note-book, on October 20th, 1901, "A common woodlouse came up on to the hillock, it was attacked by two ants and killed." The other living creatures in the nest were—*Platyarthrus hoffmanseggii*, in numbers; *Blanjulus guttulatus*, in numbers; *Beckia albina*, several; *Thyreosthenus biovata*, several; and two *Clythra* cases, containing living larvæ, fastened to bits of wood, hybernating. These evidently sprung from the eggs of *Clythra* which my ants had taken into the nest earlier in the year. I also found in the cleft of a bit of wood in the heart of the nest, the nest and eggs of the spider, *Thyreosthenus biovata*.—November 1902.

Sherborn's "Index Animalium."*

By LOUIS B. PROUT, F.E.S.

The advent of the first part of this monumental work of reference, so long awaited by serious workers in all branches of zoology, certainly merits some notice in *The Entomologist's Record.* When readers are reminded that the undertaking was commenced on July 1st, 1890, and that even after deducting the time lost through the author's unfortunate breakdown in health, its completion has taken eight years' solid work, they will, perhaps, form some conception of the magnitude of the task which has been set Mr. Sherborn, and which has been so admirably accomplished by him. But this conception becomes more definite when one looks through the voluminous "Bibliography" (pp. xi-lvi) of the "books referred to in the compilation of this index," and remembers that the "referring," has, in many cases, involved a laborious fixing, by research in contemporary literature, etc., of the date of every page, and still more when one glances through the 1195 closely-printed pages of the index itself. Most heartily do we thank Mr. Sherborn for the above-mentioned "Bibliography"†; had there been nothing else contained within the covers of his book we should still have felt that he had not laboured in vain, especially as it indicates which works contain "no specific names," "no new species," "no systematic zoology," &c. Mr. Sherborn simply calls it a "rough list of books," and we suppose this refers to the abbreviated titles by which they are catalogued, as well as to the absence of bibliographical minutiæ (dates of intermediate volumes, numbers of pages, &c.). Certainly some of the titles are a good deal abbreviated, and one would not readily recognise what was the scope, for instance, of "Sierstorpff, K.H., Insektenarten," which is really (as its full title shows) a work on insects injurious to pine. That there should be one or two slips in this part of the work, and consequent omissions in the "Index" itself, is no doubt almost inevitable where the matter which had to be dealt with was of such huge proportions. We think Mr. Sherborn is in error in saying that Gladbach's *Beschreibung Europäischer Schmetterlinge* contains "no new species"; *Phalaena tinea chrysanthemi* was erected on p. 32 of this book (1777) not (first) in Kuehn's *Kürze Anleitung* of 1783. By the way, should not all the names brought forward in Gladbach's *Namen und Preiss Verzeichniss* be dated 1778 (cfr., *Stett. Ent. Zeit.*, xvi., p. 94) instead of 1783, when they were simply *reprinted* by Kuehn? Certainly they were in circulation before 1783, *e.g.*, in Lang's *Verzeichniss* of 1782. And again, are they "nomina nuda" and not rather valid names erected on Rösel's and Kleemann's species? But the only serious omission which we have noticed—involving a really large number of names in the lepidoptera—results from our author's having unaccountably accused Goeze, in his *Entomologische Beyträge*, of being

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* "Index Animalium, sive index nominum quae ab. A.D. MDCCLVIII, generibus et speciebus animalium imposita sunt: societatibus eruditorum adiuvantibus a Carolo Davies Sherborn confectus. Sectio prima a kalendis Januariis, MDCCLVIII. usque ad finem Decembris, MDCCC." Cantabrigiae, e typographio academico, MDCCCCII, 8°, lix. + 1195 pp.

† Incidentally, too, Mr. Sherborn has earned the gratitude of all serious students by his unflagging energy in hunting up rare books, purchasing where necessary, and getting them placed in accessible libraries for reference by future workers.

"not consistently binomial," and so having neglected to cite his names in the Index, or having referred to them by Jung (1791-92), who merely quotes Goeze. We are not familiar with vols. i and ii of the *Entom. Beyträge*, which may contain something to give colour to Mr. Sherborn's view; but vol. iii, with the lepidoptera, is most emphatically "binomial," and, as the names have been accepted by all our leading synonymists—Walsingham and Durrant, Rothschild and Jordan, Zeller, Staudinger, Aurivillius, &c.—one very much regrets that they are not included, and hopes they will be appended in a supplement. That any lack of binomial nomenclature which there may be in vols. i and ii should not suffice for the rejection of vol. iii, is proved by the treatment of Degeer [surely not "Geer, de," as given in the Bibliography ?] where we find "vols. iii-vii accepted;" and that occasional inadmissibly-formed names (hopelessly trinomial, &c.) should not vitiate the whole, is shown by the author's discriminating treatment of Retzius (*Gen. et Spec. Ins.*), involving the acceptance of *Sphinx musca*, *Phalaena tubulosa*, *Pterophorus fuscus*, &c., but the rejection of such atrocities as *Phalaena violacea nigrostrigata*. Kuehn, too, appears to have honestly tried, though with somewhat indifferent success, to use Linnean nomenclature in his paper in the "Beschäftigungen" of the old Berlin Society, and one wonders whether his names *Tinea scalella* and *Phalaena aurantia* ought not to have been cited. But it seems ungracious to speak of omissions when we are feeling so devoutly thankful for the mass of help obtained. Suffice it to add that the plan and arrangement of the work are admirable in every way. All experienced students will be delighted to learn that the main index is under specific (trivial) names, not under generic, as with the *Index Kewensis* ; sound reasons are given for this in the introduction, and at a time when Colonel Swinhoe is so strenuously—and not without success—endeavouring to bring our scientific societies to their senses in this matter of indexing, we trust no one will be found to question the wisdom of this arrangement. A very important *addition*, however, is not forgotten, for pp. 1073-1195 supply us with "Part II, index to generic names, showing the trivial names associated with each, from 1758-1800." On the vexed question of Linné's really *trinomial* nomenclature in the Lepidoptera, Mr. Sherborn quotes what we may, perhaps, call the subgeneric name in brackets—*e.g.*, *Papilio* (*Plebeius*) *argus*, *Phalaena* (*Geometra*) *sambucaria*, &c., but in the generic index he disposes them under their main headings, *Papilio*, *Phalaena*, &c., thereby tacitly endorsing Linné's own statement that these are his "genera." The first author to subsequently use the combinations *Geometra sambucaria*, &c. (*i.e.*, to raise *Geometra*, &c., to full generic rank), therefore, has to be also separately quoted, and we believe this will be found indispensable in the unravelling of the tangles of homonymy. Many other points of interest might have been touched upon, but we trust enough has been said to show the invaluable nature of the work before us. It is published at the price of 25s. net, which is wonderfully cheap when one considers the contents.

Contributions to the Fauna of Spain: Bejar, Avila, etc.

By T. A. CHAPMAN, M.D., F.Z.S., F.E.S.

Mr. Champion and myself again visited Spain last summer (1902). Our experience of the previous year led us to desire its repetition, without necessarily visiting the same ground. As well as the natural wish for some variety, we felt that Spain was a large country and could afford us some good sport in many possible directions. We wanted the fine weather we had enjoyed on the Albarracin Sierra, fine without being too hot, this pointed to the great central plateau rather than the north and west, as affording moist Atlantic weather, or the south and east as too hot. It also suggested that high ground was desirable, both as a matter of climate and as affording more hopeful collecting ground. La Granja would have suited as well, except that we thought we should like to try some place less frequented by entomological and other tourists. We finally decided to make our headquarters at Bejar, a town of some 10000 inhabitants, situated on the railway from Salamanca to Plasencia and some 100 miles due west of Madrid. It is situated in the extreme southeast corner of the province of Leon, in the district of Salamanca, and close to the borders of Castile and Estremadura. Its advantages, besides accessibility and probably existent accommodation, were that it is at an elevation of some 3300ft., and is close under the Sierra de Bejar, a mountain mass rising to some 8000ft. This Sierra lies between the Sierras de Gredos and de Gata. It is well separated from the latter, less definitely from the former, of which it may be regarded as an outlier, though it is separated by a tolerably deep valley. We found the district very different in many respects from the Albarracin country. What, perhaps, made it most different for us as entomologists, and different for the worse, was the entire absence from the whole region of any limestone formation. We came across a small outcrop at Avila on the way home, and this is probably the nearest limestone to Bejar. Some of the drier and more rocky slopes reminded one a good deal of places near Cuenca, both in their aspect and vegetation, and in some of their insects, but, broadly, the vegetation, also, was very different. The Albarracin country was not mountainous, but rather an upland of rough, rocky, more or less dry hills. Bejar was at the base of real mountains, and away from these were considerable plains. In the Albarracin sierra, away from the limestone, we had pine forests, with *Arctostaphylos* undergrowth, and, in the more open places, scrub or thickets of *Cistus*, whilst on the limestone—at least, near Albarracin itself—the vegetation had even a decided African flavour, as in such plants as *Ephedra*, &c. Broom was hardly noticed. At Bejar it was granite everywhere. No pine, no *Cistus* (or very little), no spice of Africa. Oaks and chestnuts where there were any trees, where there were not then broom—always broom—acres, thousands of acres, in six or eight species of *Cytisus* and *Genista*, and other species of those genera that would hardly be colloquially called broom.

Wishing to meet with species, especially of coleoptera for which we had last year been too late, we made an earlier start, setting out on June 21st. This made us really very early, since it appeared that the season was very decidedly a late one in Spain, as in so many other parts of Europe. The earliness of our visit certainly told very much against us as collectors of butterflies. Indeed, it occurred to me more than once, in the earlier part of our excursion, that if such a note as the present came by any chance into existence it would be a very short one, and would take the well-known form, "On Butterflies in Spain." "There are no butterflies in Spain." This would have been correct, of course, only for our excursion, but it would have been nearer the truth for it than, in my character of "a mere collector," I felt to be at all pleasing.

At Bejar we put up at the Fonda of Alvaro Herrera, the "Nuevo Siglo," where we found tolerable accommodation and a fairly satisfactory commissariat. The town is on a narrow ridge. The little river Cuerpo del Hombre runs past it, and on one side affords a steep, rocky declivity under the town, a less deep valley on the other side, and a rocky slope where this little valley joins the river below the town, makes the situation of Bejar the same as that of so many other Spanish towns of the same age—a narrow ridge, easily protected, on both sides and one end, and with a level outlet only at the other. In the case of Bejar the ground even here is steep. The old walls of Bejar are nowhere well preserved. It is the seat of a considerable industry in the manufacture of woollen cloth. The collecting-ground at Bejar had to be entirely discovered for ourselves, so that it is very possible that we entirely overlooked some very desirable spots, since we found that there was some difference in fauna and flora in almost every fresh direction we explored. We especially failed to examine the ground lower than the town, chiefly because, when we felt at leisure to do so, a spell of very hot weather set in and made us avoid any direction that suggested exposure to the heat. What we considered our principal objective was, no doubt, the Sierra de Bejar, involving a climb of 4000 feet to 5000 feet to where there was, even at the end of July, still a good many large areas of snow. The way thereto was some three miles up the valley of the little river to the town of Candelario, which is some 500 feet above Bejar, whence the ascent to the sierra was a tolerably direct climb. Another excursion was over the much lower hill opposite Candelario, in the direction of Garganta and Banos de Bejar. The slopes of the hill immediately to the west of Bejar were also attractive, especially as being very accessible, whilst certain country almost as near to Bejar to the southeast afforded more good collecting ground.

After being some three weeks at Bejar we went by diligence to Avila, staying half way for about a week at Piedrahita, a large village under the slope of an outlying ridge of the Sierra de Gredos. This diligence journey afforded what I may call one of the entomological sensations of our tour. Just before we left Bejar a *Catocala* was met with rather freely in one or two localities, easily disturbed in the afternoon from walls, trees, &c., but on July 17th, at several points on the way, we saw this *Catocala* flying literally in hundreds at midday round certain oak-trees that were very numerous at most parts of the way. In its size and general appearance in the landscape this oak much resembles an olive, but the foliage is darker. No doubt this is the *Quercus grammatia*, whose edible acorns are known as "ballotas." The Spaniards we asked called the tree "Encinas." They grow it, possibly, for its shade, certainly for its acorns as food both for men and pigs. The *Catocala* proved to be *C. nymphaea*. We found it very abundant in a small piece of rough ground with these oaks at Piedrahita, a dozen or two flying off every rock when disturbed. It was, nevertheless, not easy to catch, and usually more or less damaged when taken.

(*To be concluded.*)

COLEOPTERA.

Abdera triguttata, Gyll.—On September 10th I took one example of this beetle at Newtonmore, Invernesssshire, under the bark of a fallen fir-tree. Fowler says of this species that "It has hitherto only been found in Scotland, in the Dee and Moray districts. Mr. Champion took it in some numbers at Aviemore." My identification has been confirmed by the Rev. A. Thornley.—James E. Black. *December 23rd*, 1902.

Quedius obliteratus, Er., and Quedius suturalis, Kies.—In answer to my query (*anteà*, vol. xiv., p. 266), *re* these beetles, Mr. Keys kindly sent for me to see, a specimen of *Q. obliteratus*, and a foreign type of *Q. suturalis*. As I expected, my insect from Gravesend agrees exactly with the latter species, it having much more strongly and coarsely punctured elytra than *Q. obliteratus*. Mr. Champion tells me that he has two specimens of *obliteratus* and a series of *suturalis*, so, as I supposed, we possess both species as British. All the specimens in the Power collection are *obliteratus*, and Mr. Gorham tells me he only possesses the finer punctured species. I may point out that the description in Fowler refers to the true *suturalis*, whereas, in Cox's *Manual*, the *suturalis* there referred to is *obliteratus*. — Horace Donisthorpe, F.Z.S., 58, Kensington Mansions. *November* 26th, 1902.

Aphodius tessulatus, Payk.—I have long been on the look-out for this insect, as, until this autumn, it was one of the five species of the genus which I had so far been unable to find (the others are *nemoralis*, *scrofa*, 4-*maculata* and *lividus*), and, on moving to Edinburgh, I searched the local lists to see if I could find any clue to its localities in Scotland. Dr. Sharp, in his *Catalogue of the Coleoptera of Scotland*, says it occurs in the Forth District and is very local, it is not mentioned in the *Entomologia Edinensis*, and Murray, in his catalogue, gives as the only locality Arthur's Seat. Previous captures, such as those by the Rev. T. Wood at Broadstairs, led me to suspect that, like *conspurcatus*, L., it was a late autumn insect, so, early in November, one mild afternoon, I determined to explore the higher parts of Arthur's Seat, on which there are always plenty of sheep pasturing. I soon came across the insect, which occurred in plenty in sheep droppings, whenever these were in the right condition, not too dry nor too wet. It was accompanied then by *A. contaminatus*, Herbst, and *A. punctatosulcatus*, Sturm, both in fair numbers with many of the dung-frequenting Homalotids, Tachinids and Cercyons. I made several visits later in the month and found the insect was widely distributed all over the upper parts of the hill, at heights of 500 feet and over, and I was able to send specimens to friends in need of it. Early in December we had a sharp spell of very cold weather; there was hard frost, and the hill was covered with snow for several days, the frost lasting long enough to give skaters a brief spell of their sport on the lochs; when the frost gave way we had several violent gales and heavy rain. I was anxious to see if this weather had put an end to the insects, so, on December 21st, a fairly mild sunny day, I again visited the hill, and was much surprised to find that, though naturally much diminished in numbers, the insect was still present in its pabulum, but, with the exception of three or four specimens of *Tachinus marginellus*, F., it was the only living thing to be found in the droppings, all the other species were gone, as were the Homalotids, etc. It must, therefore, be a very hardy insect; it had probably been subjected to not far short of 10° of frost for several days during the cold spell earlier in the month. It is worth mentioning that, in the *Entomologia Edinensis*, of the species of the genus most allied to *tessulatus*, the following are given as occurring near Edinburgh—*inquinatus*, F. "not infrequent in spring"; *sticticus*, Panz., "very abundant in spring," and *conspurcatus*, L., "occurs very sparingly," while in Murray's Catalogue we have *tessulatus*, Payk., also given, and its restricted locality mentioned, and as regards *sticticus*, Panz., he merely repeats the previous record. Apparently on the strength of this, Canon Fowler remarks that the Edinburgh record for *sticticus*, Panz., is a mistake. I hope this coming spring by carefully working at the genus to settle this point. In the *Entomologia* the distinguishing characters which separate *sticticus* from *inquinatus* and its allies are very clearly and distinctly given, and, as it is said to occur in abundance, the record is a remarkable one, for, apparently, Murray himself did not find the insect, and yet, if it were not *sticticus* which was taken in abundance, what was the insect? I do not think it is possible that it could have been confused with *tessulatus*. On account of their unpleasant habitat the species of this genus are neglected by ordinary collectors, and it is, therefore, probable that many of the species are much more widely distributed than the records would lead one to suppose.—T. HUDSON BEARE, F.E.S., 10, Regent Terrace, Edinburgh. *December 23rd*, 1902.

VARIETIES OF APHTHONA NONSTRIATA, GOEZE.—Some time ago Mr. Champion introduced the var. *aenescens*, Weise (*Ent. Mo. Mag.*, 1899, p. 15), of this species to our list, on the authority of examples captured by Mr. J. J. Walker and myself in South Wales. I am now able to record it from Ireland, where it occurred commonly to Dr. Chaster and myself last September at Athenry, co. Galway. The colour is almost exactly the same as that of *Haltica ericeti*. A few specimens also occurred of a dull bronze aberration, which seems to be included under Weise's description of var. *aenescens*, which runs "*Viridiaenea vel obscura aureo-cuprea.*" Mr. Donisthorpe tells me he took a specimen of this aberration in co. Kerry last June.—B. TOMLIN, M.A., F.E.S., Chester. *December 7th*, 1902.

NOTES ON COLLECTING, Etc.

NOTES ON COLLECTING LEPIDOPTERA IN SOUTH DEVON IN 1902.—Owing to the very wet and cold weather that has prevailed throughout the year, collecting has been somewhat disappointing. Many insects have been scarce, and some even have not put in an appearance at all. On the other hand, others have been more than usually plentiful (*e.g.*, the Vanessids). Sugar seemed most unattractive and unremunerative, and the ivy bloom was ruined by the very heavy hail and rain storms that prevailed during October. Below is a list of my captures, and also the observations made on the insects that came under my own notice during this season. Had I been able to do any night work in the earlier and latter part of the year, I should doubtless have been able to record many other species, but, being prevented from so doing, I have no means of commenting on the insects that occurred either at *sallow or ivy*. RHOPALOCERA.—*Pieris brassicae*, *P. rapae*, and *P.*

napi were all very abundant, especially the first named. *Euchloë cardamines*, about up to the average in numbers, but small in size. *Leptidia sinapis* did not occur in either brood in the localities near Newton Abbot and Chudleigh, where I have always met with it in previous years. *Colias edusa*, one or two examples in September, in clover fields; *C. hyale*, absent altogether; *Gonopteryx rhamni*, two hybernated males on May 23rd, and one female in September at *Umbelliferae*; *Brenthis selene*, *B. euphrosyne*, *Argynnis aglaia*, and *Dryas paphia*, all plentiful, especially the first two; *Melitaea aurinia*, which occurs in two localities near Dawlish in small numbers, was this year represented by two solitary individuals, both males; *Eugonia polychloros*, *Aglais urticae*, *Vanessa io*, *Pyrameis atalanta*, and *P. cardui* appeared in larger numbers than they have done for several years now. Larvæ of *A. urticae* and *V. io* were in abundance on nettles in some localities. Of *E. polychloros* I found three broods of larvæ—two on elm and one on sallow—and saw two other elms where larvæ had evidently fed up undisturbed. This insect appears to be on the increase in this district during the last few years. *Melanargia galatea*, plentiful in July, near Newton Abbot and Chudleigh; *Pararge egeria* and *P. megaera*, both very plentiful, females of the latter being of large size; *Hipparchia semele*, *Epinephele janira*, *E. tithonus* and *Enodia hyperanthus* all abundant; *Coenonympha pamphilus* also. *Zephyrus betulae* occurred in several spots between Dawlish and Teignmouth, and I beat 27 larvæ from stunted blackthorn bushes during the first week in June. *Zephyrus quercûs* (and larvæ) abundant on oaks, and *Callophrys rubi* also common; *Chrysophanus phlaeas* generally distributed, but not in such numbers as usual; *Plebeius aegon* occurred in considerable colonies on Little Haldon and elsewhere; *Polyommatus icarus* (*alexis*) common everywhere; *Cyaniris argiolus* scarce, being hardly to be met with in the first brood, and very small numbers of the second brood; *Syrichthus malvae*, *Nisoniades tages*, and *Pamphila sylvanus* numerous in all suitable spots. Of the former I took two, ab. *lavaterae* and one intermediate form. *Thymelicus thaumas* (*linea*) occurred in some numbers near Newton Abbot, Chudleigh, and, in suitable places, near Teignmouth and Dawlish. HETEROCERA.—*Manduca atropos* and *Agrius convolvuli* both conspicuous by their absence in all stages; *Sphinx ligustri* frequent, both in the larval stage and perfect state, at rest on fences and telegraph poles. Of *Theretra porcellus* I took five at rhododendron, and had three full-grown larvæ brought to me, which are now pupæ in my cage. I took seven larvæ of *Smerinthus ocellata* on willow, and noticed a fair number of larvæ of *Amorpha populi* on poplars. *Sesia stellatarum* was very scarce. I do not think I noticed half a dozen specimens all the year through, yet this is usually an abundant species, frequenting alike flower-beds in gardens and hot stone walls. A friend whilst out with me on August 11th took one *Aegeria cynipiformis* (*asiliformis*) at rest, and a week or ten days later I myself took two or three more in the same lane. *Anthrocera filipendulae* was plentiful, but numbers of cocoons contained dead larvæ and pupæ. *Halias prasinana* tumbled out of the oaks into the umbrella, whilst beating, in small numbers. "Footmen" turned out rather well, better even than usual. *Calligenia miniata*, *Lithosia lurideola*, and *L. griseola* (but not the ab. *stramineola*) came out pretty freely to the beating-stick, whilst L.

mesomella occurred not infrequently on some marshy ground by the side of a wood, being found at rest on bracken fronds. *L. caniola* turned up at night along the coast. Of the "Tigers" *Callimorpha dominula* occurred in one restricted locality; *H. hera* in plenty of course; *Euthemonia russula*, *Arctia caia*, and *A. villica* seen in suitable spots, the latter being the more abundant; larvæ also of *Spilosoma fuliginosa*, *S. mendica*, *S. lubricipeda*, and *S. menthastri*. I took four *Cossus cossus* (*ligniperda*) at rest on fences, and had full-fed larvæ brought to me by gardeners. I came across two broods of larvæ of *Porthesia chrysorrhoea*, and took two males and a female at rest on a wall. Larvæ and imagines of *P. similis* were plentiful. In June I beat a few larvæ of *Psilura monacha* from oaks, but they were not in their usual number. Of *Dasychira pudibunda* I took four at rest, and found larvæ numerous in fruit gardens, usually on plum-trees. *Poecilocampa populi* occurred in small numbers at gaslamps in November. Larvæ of *Malacosoma neustria*, *Macrothylacia rubi*, *Lasiocampa quercus*, and *Cosmotriche potatoria* were plentiful. I obtained a dozen or so larvæ of *Eutricha quercifolia* from hawthorn hedges, finding them on the dense closely-cut edges. *Saturnia pavonia* larvæ were to be found on the heather on the high ground. Of the "Hook-tips" I took a few each of *Drepana binaria* and *D. unguicula*, and also a few *Cilix glaucata*. Ova and larvæ of *Cerura vinula* and *Notodonta ziczac* were numerous on sallows. Larvæ of *Asphalia flavicornis* and *A. ridens* were not difficult to obtain, the first from birch and the latter from oak, though neither were in their usual numbers. During August and September I obtained a nice variable lot of *Bryophila muralis* (*glandifera*), and, on the same walls, *B. perla* occurred in numbers. Of *Leucania putrescens* I obtained five, and of *Caradrina ambigua* about three dozen. Amongst other things I also took *Triphaena janthina*, *T. fimbria* and larvæ, *Taeniocampa gothica*, *T. stabilis* and larvæ, *T. miniosa* and larvæ, *T. pulverulenta* (*cruda*) and larvæ; four *Eremobia ochroleuca* at rest on flowers of *Centaurea nigra*; *Dianthoecia conspersa* and *Hecatera serena* both at rest on walls and fences; *Cucullia verbasci* and *C. umbratica* larvæ, and imagines of *C. chamomillae*, also at rest on fences. *Gonoptera libatrix* flew in to light on several evenings, and, on August 13th, I found a pair in the daytime, *in cop.*, on a privet bush, but did not obtain any ova. *Plusia gamma* swarmed everywhere until the middle of October, flitting about the hedges and at flowers in gardens all day long. Amongst the Geometrids, *Uropteryx sambucata* was to be beaten out of every hedge, especially nut hedges, and I have three broods of larvæ hybernating from ova laid by boxed females. I took one *Epione apiciaria* whilst beating in August; *Rumia luteolata* and *Venilia macularia* were as usual plentiful, whilst the pine-woods yielded numerous *Ellopia prosapiaria* (*fasciaria*), *Macaria liturata*, and swarms of *Bupalus piniaria*. Four *Eurymene dolobraria* I found at rest on tree-trunks; and, of the "Thorns," *Selenia bilunaria* (*illunaria*), *S. tetralunaria* (*illustraria*), *Odontopera bidentata*, *Crocallis elinguaria*, *Ennomos fuscantaria* and larvæ, *E. erosaria*, and *Himera pennaria* all occurred, the first four rather numerously. Larvæ of *Phigalia pedaria* had almost denuded some of the oak-trees towards the end of May, and larvæ of *Amphidasys strataria* and *A. betularia* were not uncommon. Larvæ of *Geometra papilionaria* were very scarce, and several careful searches only produced nine. Beating by day produced plenty of

imagines of *Iodis lactearia*, *Himera thymiaria*, *Zonosoma porata*, *Z. punctaria*, *Asthena luteata*, *A. candidata*, *A. blomeri* (4), *Eupisteria obliterata* (6 or 7), *Acidalia scutulata*, *A. bisetata*, *A. rusticata*, *A. interjectaria*, *A. virgularia*, *A. emutaria*, *A. imitaria*, *A. aversata*, *A. emarginata*, *Timandra amataria*, *Cabera pusaria*, *C. exanthemata*, *Bapta temerata*, and *Halia vauaria*; *Acidalia marginepunctata* was generally to be found at rest either on a stone wall or on a stony bank; *Lygdia adustata*, *Lomaspilis marginata*, *Larentia olivata*, *L. viridaria*, *Emmelesia decolorata*, *Eupithecia subnotata*, *E. vulgata*, *E. lariciata*, *E. rectangulata*, *E. sobrinata*, *Thera variata*, *T. firmata*, *Hypsipetes elutata*, *Melanthia ocellata*, *Melanippe unangulata*, *M. sociata*, *M. montanata*, *M. galiata*, *M. fluctuata* (a large and a small race), *Anticlea sinuata* (1), *A. rubidata*, *A. badiata*, *Coremia ferrugata*, *C. unidentaria*, *Camptogramma bilineata*, *Phibalapteryx vitalbata*, *Cidaria picata*, *C. corylata*, *C. russata*, *C. immanata*, *C. prunata*, *C. fulvata*, *C. pyraliata*, *Eubolia cervinata*, *E. mensuraria*, *E. bipunctaria*, and *Anaitis plagiata*. The moorland yielded plenty of *Panagra petraria*, *Ematurga atomaria*, also *Numeria pulveraria* (4), and hosts of *Eubolia palumbaria*.—E. A. ROGERS, Kalret House, Buckeridge Road, Teignmouth, Devon. *December* 19*th*, 1902.

NOTES ON PARTIAL DOUBLEBROODEDNESS IN ABRAXAS GROSSULARIATA.—In June this year I bred a number of *Abraxas grossulariata* with a view of obtaining aberrations and turned out a quantity of rejected imagines among the currant-bushes in my garden. About the beginning of September I noticed the bushes were nearly denuded of their leaves, and, on closer examination, found that an unusual number of the larvæ had fed up and were about ready to pupate. I removed about 200 of them to a breeding-cage, and, in a few days, they spun up and pupated. I then forced the pupæ which commenced to emerge on November 1st, and continued to do so until about the 20th. The specimens were not quite so large as those of the normal brood, and presented nothing unusual in the range of variation. I have located a number of pupæ in the garden and am interested in observing their fate when left in their natural surroundings, and think it probable they will survive the winter. The greater number of the larvæ on the trees went into hybernation, but I never noticed so many feed up as I did this year.—B. H. CRABTREE, F.E.S., The Acacias, Levenshulme. *December* 5*th*, 1902.

REARING PETASIA NUBECULOSA.—I have now a nice number of pupæ of *Petasia nubeculosa* that I have reared from ova deposited by a ♀ received last April from Rannoch. This appears to be one of the easiest larvæ possible to rear on a birch diet, with a little oak given occasionally, provided that, in their later stages, the larvæ are well syringed each morning with a fine-nozzled syringe. This practice holds good also for all the Prominents, and effectually does away with all cannibalism.—JOHN F. MUSHAM, Blenheim House, South Park, Lincoln. *December* 19*th*, 1902.

HYDRILLA PALUSTRIS IN LINCOLNSHIRE.—On June 21st last, Mr. Arnold and myself paid a two days' visit to the Lincolnshire coast sandhills, with the intention of securing a few specimens of *Mamestra albicolon*, and other early local species. *Pyrameis cardui*, freshly arrived, were seen during the afternoon, but their swift flight made it almost impossible to net them. The bag for the two evenings (searching the lyme-grass with a light and sugaring on the land side of the hills) consisted of 14 *Tapinostola elymi* imagines in perfect condition, most of them at rest on the grass-stems with wings closely folded. These we did not expect as it is a much earlier date for their appearance than that given in books; *Practical Hints* states that the pupæ are to be found in mid-July and the imagines in later July and early August. One solitary moth beside these we captured at the light, which Messrs. Watkins and Doncaster have since identified as *Hydrilla palustris*, ♂, but a very worn specimen; it was netted flying in the radius of the lamp light. It is an unusual occurrence for *Hydrilla palustris* to be taken on coast sandhills, and in Lincolnshire. What is its food-plant, and is it confined elsewhere to fenny districts? There is plenty of fenland between the sandhills and the Wolds. On the sugar-patches the only visitors were two *Miana strigilis* and one *Apamea basilinea* var. *pallida*, an uncommon form in this neighbourhood.—IBID.

ADDITIONS TO THE LIST OF LEPIDOPTERA TAKEN AT LINCOLN DURING 1902.—Bad as the climatic conditions have been this year, may I add as new to the district a few examples in the larval and imaginal stages of *Mimas tiliae* on the elm-trees in the streets; and, at street-lamps on September 6th, a nice brown form of *Agrotis tritici*, agreeing with var. *cuneigera*, St. (*A. tritici* in any form is rather scarce here), and, again, on September 20th, a few examples of *Mellinia gilvago* var. *suffusa* on the same lamps. As these do no not appear to have been taken locally before they seem worth recording.—IBID.

TIME TO SEEK LARVÆ OF ÆGERIA CULICIFORMIS.—I find the best date to obtain pupæ of *Ægeria culiciformis* is on or about April 26th. Armed with a hard chisel and heavy hammer they may be readily split out of the two year old birch stumps. Kept moist in the chipped-out bits some will emerge about July 7th, but one will be lucky if half of them emerge satisfactorily.—IBID.

NOTES ON THE LIFE-HISTORY OF ÆGERIA FORMICIFORMIS.—I have been investigating the life-history of *Aegeria formiciformis*, and, so far as I can discover, the larva does not here feed in osier stems as is stated in many books, but in decaying stems of *Salix caprea*, more especially in those stems of which one side only has just commenced to decay. I have counted upwards of fifty empty pupa-skins sticking out of the holes in such a stem, whilst, on one occasion, I obtained fifteen pupæ by removing a piece of bark from a sallow growing by the side of a stream. Possibly the reason why so many lepidopterists fail to find this species in the northern counties, is that they search osier beds instead of the sallows growing by river-beds, where it appears to be very common in many places. I hope to make further observations this spring, and should I be successful, will forward further details.—JOHN R. JOHNSON, 10, Deckham Terrace, Gateshead. *December 12th*, 1902.

LEPIDOPTERA IN THE READING DISTRICT, 1902.—The season here has kept up its character for scarcity of insects, spring, summer, and autumn all alike, with the exception of about one week—August 19th to 26th. The first-named date was my best night as regards numbers, the following species being taken:—*Leucania lithargyria*, *Acronycta rumicis*, *Hydroecia nictitans*, *H. micacea*, *Xylophasia monoglypha*, *Mamestra brassicae*, *Apamea didyma*, *Miana fasciuncula*, *M. bicoloria*, *Agrotis puta*, *A. nigricans*, *A. tritici*, *A. aquilina*, *Noctua plecta*, *N. triangulum*, *N. rubi*, *N. umbrosa*, *N. xanthographa*, *Triphaena ianthina*, *T. interjecta*, *T. comes* (*orbona*), *T. pronuba*, *Amphipyra pyramidea*, *A. trogopogonis*, *Naenia typica*, *Mania maura*, *Calymnia trapezina*, *C, diffinis*, *C. affinis*, *Hadena oleracea* and *Gonoptera libatrix*. The following are the best of my other captures during the season :—April 13th, *Dimorpha versicolora*. May 11th, *Drepana cultraria*, *D. falcataria*. June 25th, *Lithosia sororcula*, *Boarmia consortaria*, *Tephrosia luridata*, *Macaria liturata*, *Zonosoma porata*, *Eupisteria obliterata*, *Melanippe hastata*. June 28th, *Bapta temerata*. July 2nd, *Lithosia mesomella*, *Angerona prunaria*, *Minoa murinata*, *Hypsipetes trifasciata*, *Erastria fasciana*. July 5th, *Melanthia albicillata*. July 12th, *Lithosia complana*, *Acronycta leporina*, *Aventia flexula*. July 14th, *Craniophora ligustri*, *Cymatophora duplaris*, *Lophopteryx camelina*, *Geometra papilionaria*. July, 16th, *Coremia quadrifasciaria*. July 23rd, *Pachycnemia hippocastanaria*. August 4th, *Melanargia galatea*, *Hesperia comma*, *Mesotype virgata*. August 21st, *Lithosia griseola var. stramineola*. August 22nd, *Noctua castanea*. September 20th, *Asphalia diluta*, *Tiliacea citrago*, *Aporophyla lutulenta*. September 22nd, *Tiliacea citrago*, *Citria fulvago*, *C. flavago*, *Tiliacea aurago*, *Mellinia gilvago*, *M. circellaris*. September 24th, *Agrotis ypsilon* (*suffusa*). With the exception of the week mentioned, sugaring has been almost a failure. I here give a few of the nights' work :—July 23rd, a bicycle ride of eight and a half miles out, self and friend sugared about half a mile of trees ; result one *Dipterygia scabriuscula*. August 14th, same place, one *Xylophasia monoglypha*, one *Noctua baia*, one *Amphipyra pyramidea*. August 27th, self and two friends ; we all sugared ; bicycle ride of ten miles out to one of our best places ; one *Xylophasia monoglypha*, all told.—W. E. Butler, F.E.S., Hayling House, Reading. *December 26th*, 1902.

Trochilium crabroniforme in Scotland.—In July, 1898, I succeeded in getting seven imagines of this species at Luffness and Aberlady, in East Lothian. In April, 1899, I obtained a number of larvæ in *Salix caprea*, near Midcalder, in Midlothian, some of those produced the moths in the following July. In July 1900 I found the pupæ common in willows at Newpark, also in Midlothian. I have seen the borings of the larvæ elsewhere, so it is not uncommon in this neighbourhood. The Luffness examples were from poplar.—William Evans, 38, Morningside Park, Edinburgh. *December 30th*, 1902.

Aquatic rhynchota about Bolton.—The following is the result of a very interrupted year's collecting in ponds, all within four miles of the town hall, and to the north and west of Bolton. I commenced on January 1st, which was a splendid day as regards weather, and turned up two specimens of *Corixa striata* ; I only took one more specimen during the whole season, probably because I did not fish the same pond again ; the various species of *Corixa* seem very locally distributed ; as far as last season's experience goes *C. moesta* and *praeusta* are both confined to a single pond ; *Notonecta glauca* and *Corixa geoffroyi*. I did no collecting whatever in February, as the ponds were all frozen, April, July to October, and December were also blank months. *Velia currens*, saw the first specimen on March 19th, very common ; *Gerris costae*, three specimens in June ; *Gerris odontogaster*, swarmed in places, first taken in May ; *Nepa cinerea*, only took one specimen, in 1901 took several ; *Notonecta glauca*, very common, usually along with var. *furcata*, but in one pond I took nine specimens of the type but not one of the variety ; *N. glauca* var. *furcata*, nearly as common as the type ; *Corixa geoffroyi*, common, has a habit of lying perfectly still at the bottom "fanning" itself with its hind-legs, much as fish do with their pectoral fins, as soon as the sun is obscured by a cloud the movement ceases, but is recommenced as soon as the sun reappears; *C. hieroglyphica*, only three specimens, all from one pond, one a very pale individual with no markings whatever on the claws, and only one or two black lines on the corium near the apex; *C. lugubris*, *C. fabricii*, *C. fallenii*, all very common; *C. linnaei*, not common; *C. sahlbergi*, fairly common; *C. striata*, not common; *C. moesta*, very common, but restricted to one pond; *C. distincta*, not common; *C. limitata*, rare, two or three specimens; *C. semistriata*, rare; *C. praeusta*, fairly common, restricted to one pond.—Oscar Whittaker, Morelands, Heaton, Bolton. *December 27th*, 1902.

CURRENT NOTES.

In the *Verhandlungen der k. k. zool.-bot. Gesells. in Wien*, iii., pp. 572 *et seq.*, Dr. Ruggero Cobelli gives a paper on "Le stridulazioni dell'*Acherontia atropos*," in which he details two experiments, both of which show that ablation of the trunk made the animal permanently dumb, and he concludes that the sound is made by the two halves of the proboscis being rubbed against each other. This result does not agree with those of Moseley, Poulton and others, who find the source of the voice in an air-chamber at the base of the proboscis, with vocal cords, &c. The animal can vocalise when the proboscis is extended, and when the two sides are separated. It is also the case that the two sides of the proboscis are very closely interlocked by thin marginal structures, which would, by Cobelli's conclusion, be the cause of the sound. The amputation of the proboscis is a severe operation, and Cobelli may even have removed it so radically as to have interfered with the vocal opening, which may also have been occluded by the bleeding so close to it. No one, certainly, has yet succeeded in seeing the vibrating opening during vocalisation, but the complete removal of the proboscis, with continuing vocal powers, is definitely described by both Passerini and Ghiliani, so that it is impossible to accept Cobelli's conclusions, without much further evidence in their favour is produced.

At the meeting of the Entomological Society of London, held on December 3rd, 1902, Mr. H. W. Andrews exhibited a male specimen of *Therioplectes luridus*, from Chattenden, July 1902. Females of this species were taken by Colonel Yerbury at Nethy Bridge, N.B., in 1900, but there appears to be no record of the capture of the male. He also exhibited a male *Platychirus sticticus*, and a female *Microdon devius*, from Eltham and Shoreham (Kent) respectively, and three small dark examples of *Syrphus balteatus*, taken near Brockenhurst, where the form was not uncommon, in October 1902.

At the same meeting Mr. A. J. Chitty exhibited a box of insects, taken between September 22nd and October 7th last, from a decayed fence or hedge made of different kinds of wood with the bark left on. The uprights of the hedge were chiefly of birch. The exhibit comprised about a hundred species, of which seventy-nine or eighty were coleoptera. Four species of beetles, *viz.*, two species of *Pogonocherus*, the scarce *Macrocephalus albinus*, L., and the extremely rare *Tropideres niveirostris*, F., mimicked the surroundings of lichen-covered bark, and one *Acalles turbatus*, Boh., resembled buds. Of the rest, there were five species of *Dromius*, *Anisoxya fuscula*, Ill., *Orchesia micans*, Panz., *Clinocara tetramera*, Thoms., and *Tetratoma ancora*, F.

At the same meeting Mr. R. Adkin exhibited a hybrid *Selenia bilunaria* × *tetralunaria*, together with spring and summer examples of both species for comparison. From a pairing which took place between a wild ♂ *bilunaria* and a ♀ *tetralunaria* reared in captivity, about sixty ova were obtained, about half of which hatched. The larvæ appeared to be sickly, and, in the result, only three imagines were reared, all males, which emerged between July 30th and August 2nd. The hybrid presented some of the markings of each of its parents, the cresentic blotch at the apex of the forewings, and the band on the hindwings closely following *tetralunaria*, but no trace of the dark spot usually so distinct on each of the wings of that species, especially in the summer emergence, was visible, while the "second line" of the forewings closely followed *bilunaria*. In colour it more nearly resembled that of the summer brood of *tetralunaria*.

At the meeting of the Entomological Society of London held on November 19th, 1902, Professor Poulton made some interesting remarks on what he terms "gastric education of larvæ," *i.e.*, the education of the alimentary canal to become accustomed to some particular food until the larva will refuse any other and starve rather than eat it; although it may be a well-known foodplant for larvæ that have been placed upon it when quite young. He stated that Mr. Church had observed the larvæ of a species of *Cucullia* (probably *C. verbasci*) feeding upon *Buddleia globosa* which was growing against a wall in Oxford Botanical Gardens. Mr. Church had sent roots of the same plant to a friend at Warwick, and there, when grown in a similar position in his garden, they were all attacked by the same species during the past summer (1902). There are three of these plants growing about ten yards apart, each about five feet high, surrounded by roses, and very inconspicuous. It is possible that the eggs are laid upon the *Buddleia* because of the very rough general resemblance in certain respects between its leaves and those of *Verbascum*. In the same manner, as Professor Poulton suggested in 1887, the common foodplants of *Smerinthus ocellata*, *viz.*, apple and sallow may be explained by the parent moth having mistaken the one for the other (*Trans. Ent. Soc. Lond.*, 1887, p. 314). In this memoir it is shown that many young larvæ, on emergence from the egg, are able to feed upon strange species of plants, which, later, they would refuse, if specialised to one of the recognised foodplants. Mr. R. McLachlan said that no doubt the first foodplant of the young larva was an important factor. *Mamestra persicariae*, a pest in his garden at Lewisham, as a rule attacked first and most *Anemone japonica*. He had this year offered them fern and elder (which is reputed a favourite food), but nothing suited them except the original anemone.

Mr. Goss stated that in August 1898 and 1899, he collected numbers of larvæ of *Eumorpha elpenor* feeding on *Impatiens fulva*, a North American species of balsam, which has naturalised itself on the Weybridge Canal and on some parts of the Thames. When the balsam was exhausted he supplied the larvæ with the usual foodplant of the species, *Epilobium hirsutum*, because it was easily obtainable close at hand. He also offered the larvæ *Fuchsia*, *Galium mollugo* and *G.*

aparine. The larvæ refused to eat any of these plants, and nearly three dozen died of starvation before a fresh supply of the balsam could be obtained from Byfleet or Weybridge. Professor Poulton expressed his opinion that unusual foodplants must be begun from the egg, and, as an example, stated the case of *Phalera bucephala*, which, after being given willow, refused to touch elm, there being with this, as with other species, evidently some sort of gastric association between the larva and its foodplant.

At the same meeting Dr. Norman H. Joy exhibited specimens of *Apatura iris* from the neighbourhood of Reading, captured in 1901. With regard to this species he said that, with Mr. Lee, he took altogether fourteen specimens, all males, eleven of them from the three top branches on the north side of a beech tree. No females were seen, in fact, it appeared to be the throne of the ruling "Emperor" of the wood. Whenever another *iris* came by, the one on the "throne" attacked it, and, after a fight in which one would eventually pursue the other out of sight, one of them would return to the perch. If this specimen was captured the next *iris* coming along would take possession of the throne, and so on, so that five were taken in one afternoon off the same tree. When on the throne they were extraordinarily confident, as more than once the chosen branch was struck hard without disturbing them, yet, if one happened to settle on a lower branch, the slightest movement even of the hand frightened it away at once.

At the same meeting Professor Poulton read the following communication from Mr. G. Frederick Leigh, of Durban, Natal. "I have perused with great interest the abstract of the paper read by you entitled 'Five Years' (1897-1901) Observations and Experiments on the Bionomics of South African Insects,' etc., in the *Proceedings of the Entomological Society of London* for this year, and, as I see no special mention of one great enemy to insects here, perhaps it may be of interest to give you particulars of the same. I refer to the ordinary and very common grey South African rat, which is one of the most dreadful pests to the breeders of butterflies and moths that I know of. These rats seem to be particularly fond of almost any pupæ, and I have had thick wooden boxes containing pupæ eaten right through, and the contents all devoured. They are especially fond of *Choerocampa eson* and *C. nerii.* Even more remarkable than their keenness in hunting pupæ is the way in which they capture moths on the wing whilst feeding. Over the verandah of my previous residence here, I had a large honeysuckle upon the blossoms of which a great number of Sphingid species used to feed. Whilst I have been watching them just at dusk, all of a sudden I have heard a rush and down came a rat from the roof right on to the plant, and more often than not the moth selected for attack was captured, usually followed by a fight amongst the rats over the prize. The moths I have seen captured in this way are *Sphinx convolvuli*, *Nephele variegata*, *Choerocampa eson* and *C. celerio.* The first named is the most successful in escaping, owing to the long proboscis which compels it to hover at some distance from the blossom. *N. variegata* is probably the swiftest flier, but it is more conspicuous owing to its dark colour. Bats are also very destructive of South African insect-life. I have often seen them swoop down and take both moths and beetles on the wing. *Charaxes ethalion* also has a terrible enemy in the larval state in the shape of a small Mantis larva. This butterfly, instead of being rather rare, would be one of our commonest species, as the ova and youug larvæ can be found by hundreds in April on certain small trees. After leaving them to grow in the natural state upon their foodplant, I was surprised, in the season of 1901, to find only single larvæ here and there where there had been great numbers of both ova and young larvæ. This season I determined to find out the reason and marked down several young trees with hundreds of eggs upon them. After they had hatched I watched every day and found them getting less and less numerous, so I paid a visit by night with a lantern and then found the cause. On all the trees were several larvæ of a Mantis eating the young *C. ethalion* larvæ for all they were worth. This winter I have planted small trees in my garden and hope to breed *C. ethalion* next year by protecting it in 'sleeves.' I may also mention that *C. ethalion* is badly ichneumoned in the oval state."

Professor E. B. Poulton is to be the next president of the Entomological Society of London, and possibly no more popular choice could have been made. Even those who disagree with his theories cannot but admire his energy and the cool certainty with which he advances the most remarkable views, and the *ex cathedra* way in which he occasionally lectures those who disagree with him. His lectures on the proposal to amend the byelaws have been charming, but we do sincerely hope that he will put aside for ever the notion that Fellows who hold a different opinion from the Council are censuring the Council by giving effect to their own opinion. One thing is certain, there will be some life at the meetings of the Entomological Society of London in the immediate future.

Colonel Bingham, Mr. Burr, Dr. Chapman, Mr. Druce, Professor Meldola, Professor Miall, and Colonel Yerbury, form, on the whole, a very fair choice of new members on the council. It is true we are not conversant with any recently published work of one or two of these gentlemen, but this possibly is our own fault. The Council has to be careful to select for its favours, men who are now running the entomological work of the country in its various branches and not those who have retired from active work.

Herr Gauckler of Carlsruhe sends us a separatum from the *Entomologisches Jahrbuch*, entitled "Ein Beitrag zur Eiablege der Schmetterlinge," in which he has brought together a large number of statistics (nearly all from his own personal observation) of the average numbers of eggs laid by various species of lepidoptera, and the average percentages of moths bred. His general conclusion is that the smallest numbers are laid by Rhopalocera (with some exceptions, however, such as *Pieris brassicae*, *Aporia crataegi*, *Colias edusa*, Vanessids, etc.), then follow the Sphingids, Geometrids, Bombycids [*sens. lat.*] and Noctuids, individual females in the last two "families" sometimes yielding as many as 800 ova. He considers that the Geometrids repay the breeder best in the percentage of moths yielded.

Last November we pointed out that the alterations of the bye-laws of the Entomological Society, proposed by a Committee of the Council, did not meet the supposed demand for giving the Fellows at large greater facilities for expressing their wishes in the election of Officers and Council, but, on the contrary, very much diminished those they then enjoyed. The special meeting of the Society on December 3rd made very significant and effective amendments to the proposed alterations before passing them, clearly showing the real wish of the Society to make it easier for the unofficial Fellows to make themselves heard. The effect of Chapter xix, as now adopted, is to bring the Council's nominations before two ordinary meetings of the Society, so that Fellows have reasonable opportunities for comparing notes and determining whether they feel it necessary to make any additions to the Council's nominations, and, if so, they may do so up to the end of the second meeting. The whole of the nominations, those of the Council and of unofficial Fellows, will then go to the ballot on one list at the Annual Meeting.

The following anomalies may be noted: (1) Under the old bye-laws *every* Fellow of the Society had notice of the Council's nominations, and at least ten days thereafter to formulate his dissent. Now only those Fellows who attend the meetings have such notice until too late to take any action. This is a grave defect. (2) The long period between the December and the annual meetings, provided under the old bye-laws to give time for the electoral machinery to act, appears to be now largely a waste of time.

The new bye-laws, even if there be only the actual number of Fellows nominated to fill existent vacancies, provide for a ballot. In the minds of many Fellows an annual ballot appears to be most desirable. We presume the intention is to give the Council an idea of any unpopular choice.

In relation to Chapter iii, it is pointed out to us that bye-laws of societies almost invariably provide for the annual retirement from the Council of a specified number of members and that not to do so is a remarkable innovation. The new Chapter iii merely says that no Fellow shall serve on the Council for more than three years consecutively. The Council for 1903 as nominated will provide no retiring members under this clause for 1904 and eight for 1906. Casual vacancies will possibly alter this inequality, but, in the long run, are as likely to aggravate as to relieve it. To get useful work out of a regularly-attending member of Council he ought to serve for three years, so that next year there may be no nominations by the Council to the Council except by the occurrence of casual vacancies or such cases of flagrant non-attendance as may give the Council courage to go beyond its bye-laws, which do not preclude the Council (or the Society), from declaring twelve vacancies if it chooses. The bye-law, by stating the reason for retirement from the Council, seems to imply that others are of minor importance and only to be acted on under exceptional conditions. The traditions of the Council that have grown up under the old bye-law, are of course of little weight under the new one.

The anomalies in the new bye-laws are due to the fact that the new provisions in Chapter xix were unknown to the Society until a few minutes before they were passed, and consequently no time was afforded for considering their complete bearing and of bringing them into consonance with the remainder of the code.

ERRATA.—Vol. xiv., page 272, line 38.—For "*Hesperia comma*" read "*Hesperia sylvanus*."—T. A. LOFTHOUSE.

ERRATA.—Page 342, line 36. For "June 3rd" read "July 3rd"; also page *305, line 52, for "forage"* read "furze".—W. G. CLUTTEN.

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EXCHANGE BASKETS.—January 17th, 1903, No. 1 basket.—Dr. Riding, Messrs. Lofthouse, Day, Studd, Robertson, Fox, Horne, Bower, Mera, Woodforde, Bowles. January 17th, 1903, No. 2 basket.—Messrs. Whittle, Atmore, Riding, Walker, Robertson, Adkin, Studd, Bower, Woodforde, Ash. [Members who wish to be missed must write to the name preceding their own on list, not to the Secretary]. The names of one or two new candidates for admission would be welcomed and room made as opportunity offered.

Duplicates.—Ornithopus, Variata*, Polychloros*, Paphia, Aprilina, Sibylla*, Macilenta, T. quercus*, Rufina, Monacha*, Fimbria*, Gothica, Cervinata*, Lucipara*, Areola, Valesina (fair), Pennaria* (♂ s), Syringaria* (4). *Desiderata.*—Numerous.—*L. F. Hill, 2, Freelands Road, Bromley, Kent.*

Duplicates.—Dilutata, Promutata, Boreata, Ligula, Vaccinii, Satellitia, Testacea, Sylvinus, C. nigrum, Oxyacanthæ, all well set on black pins. *Disiderata.*—Very numerous any stage. Lists exchanged.—*J. Ovenden, Frindsbury, Rochester.*

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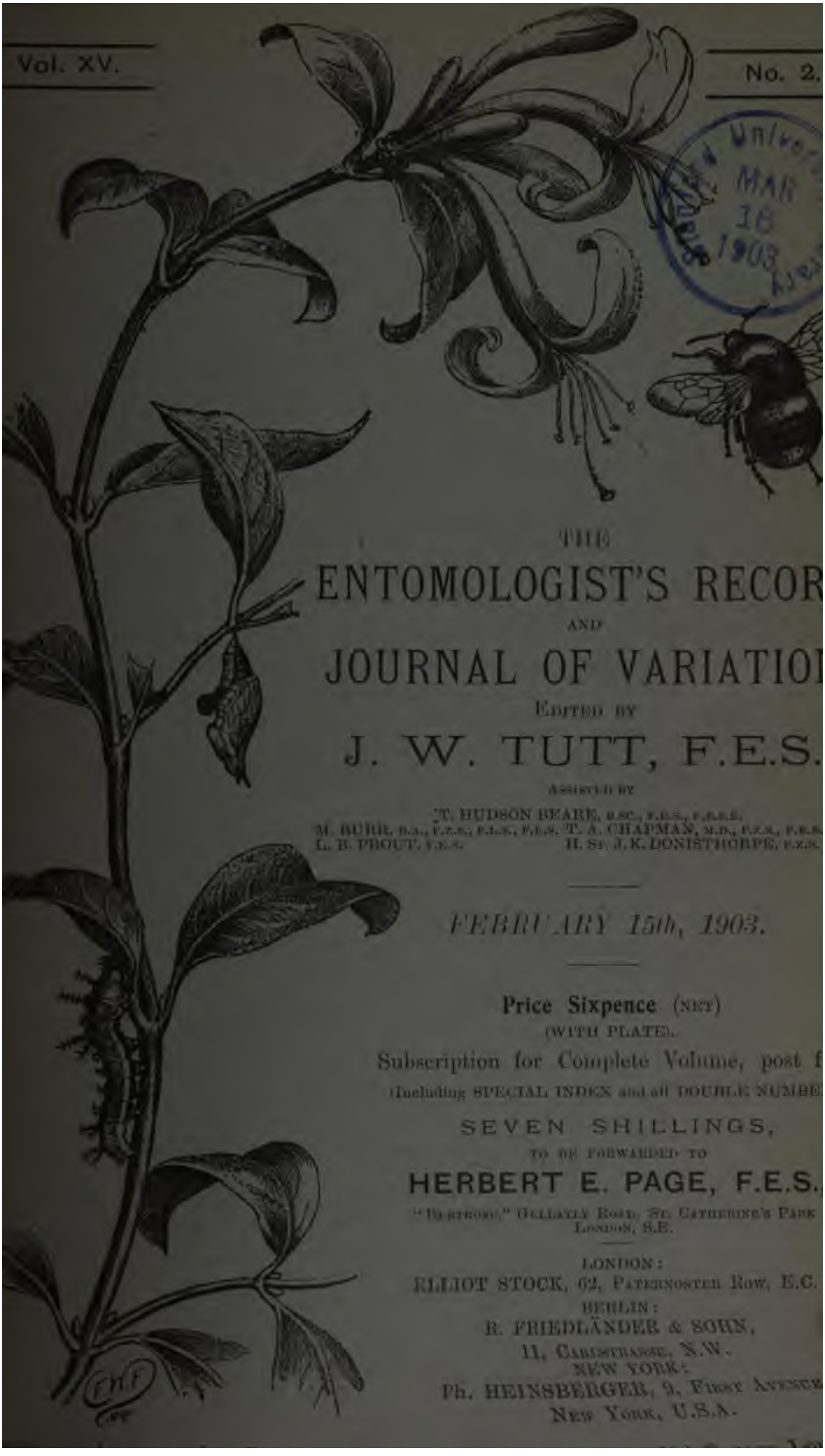

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Retrospect of a Lepidopterist for 1902.

By LOUIS B. PROUT, F.E.S.*

For lepidopterists the year 1902 does not seem to have been a strikingly eventful one as compared with many within their recollection. It will, perhaps, be chiefly remembered—at any rate, by the field workers—for its deplorably bad weather during the greater part of the summer months. Low temperatures and absence of sunshine were more notable than actual rainfall, and probably more unfavourable to some, at least, of the lepidoptera. Undoubtedly, however, there was also plenty of rain, and—if one may judge for all—it was generally at most inopportune times for the collector, and many a promising excursion was marred or abandoned altogether. This being the state of things, it is not surprising to find that lamentations over a "poor season" bulk large in our magazines.

If one of the principal exciting causes of emigration be the sudden increase of the species in their usual localities, it is hardly to be expected that such a season as that of 1902 will have brought us many immigrants, always assuming that southern Europe and north Africa have shared in the general scarcity of insect life. In any case, I can find but few records of the "casuals" during the year, in marked contrast to 1901, when we were congratulating ourselves on a good few of *Pontia daplidice*, *Euvannessa antiopa*, *Hippotion* (*Choerocampa*) *celerio*, *Deiopeia pulchella*, &c., and single specimens of *Heliophila* (*Leucania*) *l-album* and *Luperina dumerilii*, with, perhaps, others equally noteworthy. The year 1902, on the other hand, has given us very few, indeed, of even such frequent occurrents as *Agrius convolvuli*, *Manduca atropos*, *Sesia stellatarum*, &c. The two species of *Colias* appear to be just lingering on in some of our south-eastern localities, but I have heard of no signs of a fresh immigration. I have only noticed one record of *Euvanessa antiopa*, seen near Chichester (*Ent. Rec.*, xiv., p. 348). Perhaps the most unexpected record was that of a stray specimen of *Polyommatus hylas* at Dover, on September 7th, exhibited by its captor, Mr. Sloper, at the Entomological Society of London, and commented upon by the Editor of the *Entomologist's Record*, xiv., p. 354; there is no reason to believe that this was otherwise than a purely accidental introduction. By an equally pure accident, no doubt, a specimen of *Papilio machaon* has occurred near Wellington College Station, Berks. In dealing with such records as this, one always has to remember how many breeders of lepidoptera we have in the country, and how often some of the bred specimens escape or are turned loose. The attempted immigration of *P. machaon* in 1900 seems to have been quite abortive. I have only noticed a single record of *Pontia daplidice* for 1901, namely, at Brighton (*Entom.*, xxxv., p. 266), where, it will be remembered, more than one occurred in 1901. A few other rarities were recorded in the same number of the *Entomologist*—namely, *Phryxus* (*Deilephila*) *livornica* at Starcross, *Hippotion celerio* at Emsworth, *Aegeria andreniformis* at Glanvilles Wootton. The capture of the *P. livornica* is interesting, in that it was taken in the larval state, which very rarely happens with this species in Britain. One *Hyloicus* (*Sphinx*) *pinastri* has been taken at Winchester (*Ent. Rec.*, xiv., p. 243), and, perhaps, comes under the *Papilio machaon* category; but "several *Hippotion celerio*" at Douglas, in one evening—May 25th—(*t. c.*, p. 193) strikes one as still more remarkable, and it is a pity the report does not say whether they were captured and the identification absolutely confirmed. *Heliophila* (*Leucania*) *albipuncta*, we are told, has strayed as far as Suffolk (*Ent. Mo. Mag.*, xxxviii., p. 263), and has continued to occur in its earlier haunts in the Isle of Wight and South Devon, but *H. vitellina* seems to have disappointed the hopes of those who sought it in these localities, and to be only recorded from Canterbury, two specimens in October (*ibid.*, xxxix., p. 15); probably it was out so late that collectors had given up working for it. *Laphygma exigua* has also been extremely scarce in south Devon, but *Heliothis armigera* turned up a little more freely. Two *Glaea* (*Cerastis*) *erythrocephala* have been taken at Bournemouth (*Ent.*, xxxv., p. 323).

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* Read before the North London Natural History Society, January 27th, 1903.

Of new or unusual localities for sedentary species, several have been recorded. A few which occur to one are south Devon for *Nola albulalis* and *Nonagria sparganii*, on the authority of Mr. Porritt, and the Isle of Wight for *Acidalia degeneraria* (*Ent. Rec.*, xiv., p. 274). To these may be added *Hydrilla palustris* on the Lincolnshire coast, not recorded till the present year (*ibid.*, xv., p. 21), and *Percnoptilota* (*Camptogramma*) *fluviata*, a ♀ taken by my friend Mr. J. E. Gardner, in my company, at Muchalls, Kincardineshire, on the evening of July 31st. Probably the last-named may be somewhat of a migrant, as it appears in so large a number of localities, though usually singly.

As for actual bona-fide "additions to the British list," they are now very infrequent in this well-worked order, although there are, no doubt, still some discoveries awaiting our micro-lepidopterists in the more difficult groups, where close allies are liable to have been overlooked or not differentiated. *Coleophora milvipennis*, Zell., is claimed by Mr. Barrett during the year (*Ent. Mo. Mag.*, xxxviii., p. 79), but the material is at present very slight. The bulk of the lepidopterous "additions to the British list" indexed in the *Entomologist's Record* for 1902 are, however, merely newly-named aberrations. Mr. Mousley has been working out the variation of *Erebia aethiops*, Mr. Edelsten that of *Heliophila* (?) *brevilinea*, while a few other interesting aberrations have been named and diagnosed, such as *Graphiphora* (*Taeniocampa*) *pulverulenta* ab. *haggarti*, Tutt; *Cuspidia megacephala* ab. *nigra*, Shaw; *Amathes* (*Noctua*) *rubi* ab. *flava* and ab. *ochracea*, S. Walk.; *Cyclophora pendularia* ab. *subroseata*, Woodforde.

Abnormally late dates of appearance of species have been characteristic of the season, and I wish I had had time to collect a series of them, as they would be interesting and valuable; several will be found scattered in our magazines. My own experience of Sandown, which I have so often visited at exactly the same time of year (mid-July) gives me a chance of making some pretty exact comparisons, and I should say unhesitatingly that the season 1902 was the latest since I commenced systematic work there—about 1889. During the few days which I spent there (July 21st to 25th, 1902) species were still about which I have never before seen there, such as *Rusina umbratica* (*tenebrosa*), *Axylia putris*, *Xylena hepatica*, *Amathes* (*Noctua*) *festiva*, *Agrotis segetum* (first brood), *Mamestra* (*Hadena*) *dissimilis* (first brood), *Heliophila pallens* (first brood), besides others (some in numbers), which are usually "over" or at their "last gasp," such as *Caradrina* *morpheus*, *Mamestra dentina*, *Oligia* (*Miana*) *strigilis*, *Agrotis corticea*, *Xylena sublustris*, *Pyrrhia umbra*, *Stenia punctalis*, etc. But my most astonishing experiences were in Scotland, where the May and June insects were still in evidence, often even in good condition, up to the beginning of August, *e.g.*, *Xylena rurea*, *Oligia fasciuncula*, *Apamea gemina*, *A. basilinea*, *Heliophila* (*Leucania*) *comma*, etc., lasted on well into August; two *Rusina umbratica* (*tenebrosa*) were noticed on July 31st; a very fair *Eupithecia satyrata* on July 30th; a fresh *Pharetra euphorbiae* var. *myricae* on July 31st; an equally fresh *Dianthoecia conspersa* on August 3rd; and many other striking dates could easily be mentioned.

For only a few species has the year 1902 been an exceptionally good one. I may mention *Plusia bractea* in Scotland and Ireland, *Aporophyla australis* in the Isle of Wight, *A. nigra* in several parts, *Cleorodes lichenaria* in Devonshire; *Cynthia cardui* and *Plusia gamma*—unlike most of the migrants—have also abounded in the South of England.

Of interesting scientific work done during the year, I must refer to some further experiments in hybridisation—a field of research of which we are only just beginning to realise the importance. Prof. Standfuss has at last succeeded in obtaining the reciprocal cross to the well-known hybr. *hybridus* of *Smerinthus ocellata-populi*, namely, a pairing of *Amorpha populi* ♂ with *Smerinthus ocellata* ♀, though he has only as yet succeeded, after much pains, in rearing two moths therefrom. One awaits also details from Mr. Newman of Bexley, who has, I understand, been carrying out extensive and successful hybridisation experiments on these and other species. It is confidently anticipated that he will at least give us a statement of results. Mr. Bacot is still persevering with the *Malacosoma* species, and not without his reward. Mr. Adkin has recently paired *Eutrapela bilunaria* ♂ with *E. tetralunaria* ♀, and exhibited one of the three resultant specimens (all ♂s) before the Entomological Society of London.

The Societies, by the way, have done a great deal of work of interest to lepidopterists. The premier Society, with the advent again of Professor Poulton to a prominent position (as a Vice-President), has awakened to new activity in its exhibits, etc., he having made some of the meetings very popular and attractive with his lantern exhibitions by the Sanger-Shepherd three-colour process. Needless to say, the subject has been the Professor's pet hobby of protective coloration, etc., and with him as President for 1903 we may look for further prominence during the coming year of this interesting subject. Mr. W. J. Kaye has also contributed valuable exhibits illustrative of Müllerian mimicry, Mr. Merrifield has shown us a photograph of the peculiar protective posture of the larvæ of *Hygrochroa syringaria*, and Mr. C. P. Pickett has been well to the fore with his exhibits of good aberrations of British species. Amongst the papers, too, there has been much of value to the lepidopterist. A long and excellent paper by Guy A. K. Marshall and E. B. Poulton, illustrated with many plates (*Trans. Ent. Soc. Lond.*, pp. 287-584, pls. ix-xxiii), on "The Bionomics of South African Insects, chiefly directed to the Investigation of Mimicry and Warning Colours," strikes one as being alone worth much more than *one's* annual subscription to the Society, and deals largely with lepidoptera. Dr. Chapman's papers on "Asymmetry in the Males of Hemarine and other Sphinges," and "On *Heterogynis paradoxa*, Rmbr., an instance of variation by segregation," are in his well-known masterly style, and his erection of the *Hypotianae* as a "new subfamily of *Pyralidae*" is also carefully worked out and in every way satisfactory. Colonel Swinhoe has done valuable service in working out the mass of previously unarranged material amongst the Eastern and Australian *Geometridae*, etc., in our National Collection. One of his introductory remarks is worthy of consideration: "This family" (the *Geometridae*) "is well worth the careful study of any biologist interested in the convergence of superficial characters," and he adduces a few striking instances.

Concerning the smaller societies, I have only time to mention one really first-class paper, namely, "A life history of *Phyllocnistis suffusella*, Zell.," read before the City of London Entomological Society by Mr. Alfred Sich, F.E.S., in January, 1902. It is altogether the fullest and most satisfactory contribution which has yet appeared to the literature of that interesting genus.

Passing to literature in general, we must, of course, first remember the third volume of Mr. Tutt's colossal undertaking, "British Lepidoptera." This volume is dated July, 1902, and the exhaustive treatment of the subject by its author is best realised when we remind ourselves that its 558 closely-printed pages are devoted solely to the natural history of thirteen species, and the families, etc., to which they belong. The volume is peculiarly rich in the material which it brings together concerning the important subjects of hybridity and of gynandromorphism, both of which enter largely into the economy of some of the species of which it treats—*Lasiocampa quercûs*, the *Saturniides*, *Amorpha populi*, etc.

Mr. Tutt's ceaseless literary activity is further evidenced by the fact that, notwithstanding the claims of his great work upon his time, he has managed during the year to bring out two other books on his favourite subject. The valuable series of articles on "Migration and Dispersal of Insects," which has been running through the *Entomologist's Record*, is now completed, and has been separately published in book form. The author's weighty "final considerations" will probably have an influence with every future student of the subject. The other book referred to is Part II of Mr. Tutt's very successful "Practical Hints for the Field Lepidopterist," which should prove a boon to many an active collector.

On the whole, however, the literary output for the year does not seem to have been abnormally large. Several more or less important books are "in progress," appearing in parts at irregular intervals, but most of them make tediously slow progress, which is probably in many cases due to the shortcomings of the artists, or—as they would tell us—to our English climate, with its lamentable scarcity of suitable bright weather for their work. Barrett's *British Lepidoptera*, Moore's *Lepidoptera Indica*, Semper's *Schmetterlinge der Philippinischen Inseln*, Grose Smith's *Rhopalocera Exotica*, Kirby's new edition of Hübner's *Sammlung Exotischer Schmetterlinge*, Rühl-Bartel's *Palaearktische Grossschmetterlinge*, and Spuler's *Schmetterlinge Europas*, have all made some little progress; a new edition of Kirby's *Butterflies and Moths of Europe* has also been commenced. To *Das Tierreich* Dr.

Pagenstecher contributes a working-out of the *Callidulidae*, to Wytsman's *Genera Insectorum* the editor himself contributes *Leptocircinae*, Mr. Rippon a section of the *Papilioninae*, and Pagenstecher the *Libytheidae*. Of works dealing with special faunæ, wider or narrower, only some of the principal can be mentioned. The first volume of a large work on Belgian lepidoptera by M. Lambillion is favourably noticed in the *Ent. Record*, p. 224. An up-to-date local list of 100 pages for Berlin has been published by Bartel and Herz; Petersen gives us a fauna of 217 pages for Esthonia; Bachmetjew, one for Bulgaria in the Russian *Horae*, and Kroulikowsky, one for the Government of Jaroslaw in the same journal; Naufock's "Fauna of Lower Austria" occupies the greater part of the annual volume of the Vienna *Ent. Verein*; Tessmann discusses the lepidoptera of Stavenhagen in the *Arch. Ver. Fr. Nat. Meckl.*; Strand continues his Norwegian contributions in the *Nyt. Mag. Nat.*; Hagen has worked out the Mentawai lepidoptera in Maas' *Bei liebenswürdigen Wilden*, and in the *Abh. Senck. Nat. Ges.*; and Hampson, the *Noctuidae* of South Africa in the *Ann. S. Afrc. Mus.* Petersen's *Lepidopteren-Fauna von Estland* is of more than faunistic interest, on account of his many valuable notes on differentiation of allied species by the ♂ anal clasps, etc. The new edition of Wallace's classic *Island Life* will also have to be consulted by lepidopterists for up-to-date information on geographical distribution; and its author's application to Mr. Tutt for assistance has further resulted in the publication by the latter of a useful list of species and forms thus far only recorded as British, which has appeared in the pages of the *Entomologist's Record*.

New species from almost all parts of the world are still being described by Warren, Walsingham and Durrant, Meyrick, Rebel, Schaus, Lower, and many others, but details will, of course, be sought from the usual sources of reference.

I notice also that several books and pamphlets have been published on various branches of economic entomology, sericulture, etc., but they have not interested me personally, and I am unable to supply particulars.

Of our three principal entomological magazines, the *Entomologist's Monthly* maintains its high position, but the volume for 1902 does not contain very much which will be of interest to the average lepidopterist. Doubtless, however, Mr. C. W. Dale's series of historical articles on some of our rarer British Rhopalocera—"*Lycaena acis*" (*Nomiades semiargus*), *Lycaena arion*, *Papilio machaon*, *Aporia crataegi*, etc.—will form an exception, whilst the more scientific disposed will turn with pleasure to Dr. Chapman's paper on *Crinopteryx familiella*, and the few who are engaged in attempting to reduce our chaotic nomenclature to order will have to make themselves acquainted with Walsingham and Durrant's closely-reasoned repudiation of Billberg's *Enumeratio* as of any authority on the subject. In the *Entomologist's Record* one finds a good deal of valuable faunistic work, both British and foreign; Mr. Tutt's contributions on peculiarly British forms and on "Migration" have been noticed above; and life-histories and variation also come in for a good share of attention. The *Entomologist* contains a variety of readable material, including "The Classification of *Gracilaria* and allied genera," by Dr. T. A. Chapman, "Life-History of *Vanessa antiopa*," by F. W. Frohawk, and other articles too numerous to mention.

Retrospect of a Coleopterist for 1902.

By Professor T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S.

(*Concluded from* p. 5.)

In regard to additions to our catalogue during 1902, the following, not mentioned in the earlier part of my article, should also be put on record—*Lema septentrionis*, Weise. When Mr. Champion introduced this species (*Ent. Mo. Mag.*, xxxiii., p. 135), he was of opinion that we did not possess *erichsoni*, Suffr., but Mr. Donisthorpe (*Ent. Record*, vol. xiv., p. 240), says he is convinced that we do; he considers all the Irish insects to be *septentrionis*, Weise, and the three found near Hastings to be *erichsoni*, Suffr., and I certainly am inclined to agree with him now that I have had an opportunity of examining his recent Irish captures, and comparing them with the Hastings specimens. Mr. F. B. Jennings described (*Ent. Record*, vol. xiv., p. 99), a blue ab. of *Calosoma inquisitor*, L., taken in the New Forest, and suggested it might be the ab. *coeruleum* of Ragusa. In reference to *Quedius obliteratus*, Er., attention should be drawn to the fact that the beetle described by Cox in his *Manual* as *suturalis* is really *Quedius obliteratus*.

In regard to notes and papers dealing with life-histories and field observations, in addition to those already dealt with, mention should be made of the following—A paper by Mr. Bignell (*Ent. Mo. Mag.*, vol. xxxviii., p. 288) on *Histeromerus mystacinus*, Wesm., a Braconid parasite taken along with *Sinodendron cylindricum*, Linn., by Mr. Keys, and a note by Mr. Piffard in the *Ent. Record*, p. 340, in which he described a discharge produced by *Achomenus junceus*, Scop., which was similar to that of *Brachinus crepitans*, L.

At the meeting of the Entomological Society of London on November 5th, a paper by Mr. L. R. Crawshay was read, entitled "On the Life-History of *Drilus flavescens*, Rossi." The author had bred this insect in numbers, securing plenty of the very rare females, and was able to give a list of the snails upon which the beetle feeds. I hope to say more upon this paper when I have had an opportunity of reading it; the part of the *Transactions* which contains it has not yet been issued to members.

I have already made brief mention of the admirable Presidential Address delivered by Canon Fowler on January 15th last, and published in part v of the *Transactions of the Entomological Society of London* for 1901. The address dealt chiefly with Protective Resemblance and Mimicry in Coleoptera; in the preliminary remarks, data collected by numerous observers were given to prove that Coleoptera are beset by numerous enemies, and then the various methods of protection were discussed in detail. Special attention was devoted to the cases of "Müllerian mimicry," and many striking illustrations were quoted. In concluding his address, Canon Fowler dealt briefly with objections which have been raised to these theories, and to the extreme difficulty in the present state of our knowledge of satisfying persistent objectors, but he truly says "the ever-increasing mass of facts cannot be all due to accidental circumstances," and again "we feel that we are resting on an ever-increasing foundation of incontrovertible fact." The mass of facts he was able to produce must surely appeal to even the most obstinate opponent.

Though the above records show that much good work has been done, there are still many problems which require solution. Our lists, for example, are still cumbered with a number of names which have been introduced upon somewhat flimsy grounds, and for which no solid justification can apparently be adduced. I myself am working at this question, and trying to determine whether or not it is desirable that certain names should be removed, on two grounds, first, that the original introduction was due probably to some mistake, not in identification, but in locality, and secondly, that there have been no authentic records of any capture since the insects were first introduced. *Trichius abdominalis* is an illustration, and there are many others.

Another set of problems, waiting for some one with sufficient leisure and patience, are those in connection with the life and habits of certain of our more remarkable beetles; these will never be solved till the plan followed by Mr. Crawshay in dealing with *Drilus flavescens*, Rossi, is adopted. Mr. Burgess Sopp has, I know, been dealing with the life-history of *Chrysomela cerealis*, and it is to be hoped that he will shortly publish the results of his investigations.

Retrospect of a Dipterist for 1902.

By J. E. COLLIN, F.E.S.

The record of the published work on Diptera during the past year is a small one, especially that relating to the British Isles; possibly the most important British publication was a new edition of Verrall's *List of British Diptera*, published in December, 1901, in which were included a number of species not hitherto recorded as British, but nearly all of which are represented in Mr. Verrall's collection. Wainwright has given two notes on *Tachinidae*, introducing *Meriana argentifera* (*Entom.*, p. 249, pl. iii), and *Ceromasia sordidisquama*, Zett. = *wulpii*, B. and B. (*Ent. Mo. Mag.*, p. 227). I have described four new species of *Borboridae* occurring in England, and given notes upon *Acletoxenus formosus*, Lw. = *syrphoides*, Frauenf. (*Ent. Mo. Mag.*, p. 55, and pp. 1 and 282), and the Hon. N. C. Rothschild has described some new British fleas (*Ent. Mo. Mag.*, p. 225, pl. iv), which, though not now generally recognised as Diptera, may well be mentioned here. In the *Irish Naturalist* (vol. xi., pp. 74-93), Colonel Yerbury has given a list of the Diptera met with in Cork and Kerry during the summer of 1901, with some interesting notes on their habits, &c.; and J. H. Carpenter, in the *Econ. Proc. Roy. Dublin Soc.*, i. (iii.), no. 5, published an account of the injurious insects observed in Ireland during 1901, among which are some Diptera. Connold's book on British vegetable galls should prove of interest to students of the British *Cecidomyidae*.

A special feature of the work of Continental dipterologists during the past year has been the study of type-specimens. Meigen's types of the so-called *Muscidae Acalypterae* (*Muscaria holometopa*), and those of the genus *Chilosia*, have been examined by Becker, who has published his interpretation of them (*Zeitschr. Hymen. u. Dipt.*); Stein has given the result of his examination of the types of Wiedemann's and Jaennicke's exotic *Anthomyidae* in the same periodical, and of Zetterstedt's, Boheman's, and Holmgren's *Anthomyidae* (*Wien. Ent. Zeit.*); Speiser has published a paper on the type-specimens of Bigot's *Diptera* *pupipara* (*Zeitschr. Hymen. u. Dipt.*); and Miss Ricardo, in continuing her studies on the *Pangoninae* (*Ann. Nat. Hist.*), has elucidated some of Walker's and Bigot's types. The commencement of a "Catalogue of the Diptera of the World," by Kertesz (Lipsiæ, Engelmann), and a "Monograph of the Palæarctic *Sciomyzidae*," by Hendel (*Abh. z.-b. Wien.*), are two important publications of the past year. The latter writer has also contributed various small articles on Diptera (*Wien. Ent. Zeit.*, *&c.*). Pandèllé has continued his "Etudes sur les Muscides de France" (*Rev. Ent. Caen*), Portschinsky has written upon the *Oestridae* (*Ann. Mus. St. Petersb.*) and the *Cecidomyidae* have been dealt with by Kieffer, Trotter, J. Darboux et C. Houard, &c., and the first number has been issued of a journal called "Marcellia," edited by A. Trotter, and published at Avellino (Italy), which is devoted entirely to articles upon "Galls and gall-makers."

The dipterological results of a short collecting trip in Egypt have been published by Becker (*Mt. Mus. Berlin*), consisting of 66 pages and one plate. Other faunistic papers are Grimshaw's "Diptera Fauna Hawaiiensis" (Cambridge, 1901), Hutton's "Diptera brachycera of New Zealand" (*Trans. N. Zealand Inst.*, vol. xxxiii), Kertesz's articles upon the South American species of *Ceria* and *Chrysopila* (*Termés Füz.*), and Theobald's "*Culicidae* of India" (*Proc. Roy. Soc. Lond.*). Other writers upon the *Culicidae* include G. M. Giles, who has published a second edition of his "Handbook of the Gnats or Mosquitoes"; H. Polaillon, "Contribution a l'etude de l'histoire naturelle et medicale des Moustiques" (Paris, 128 pp., 32 figs.); and Stephens and Christopher's *Report to Malaria Comm. of Roy. Soc.*

North American dipterologists, including such names as Coquillet, Johnson, Aldrich, and J. B. Smith, have contributed articles upon their fauna of Diptera in various American magazines.

Papers on the morphology, histology, &c., of the Diptera have been published by Meijere, "Ueber die Prothorakalstigmen der Dipterenpuppen" (*Zool. Jahr. Jena*); Escherich, "Zur Entwicklung der Nervensystems der Musciden" (*Zeitschr. wiss. Zool. Leipsig*); and Vaney, "Contributions a l'etude des Larves et des Metamorphoses des Diptères" (Lyons, 178 pp., 4 pls.); and others.

Contributions to the Fauna of Spain: Bejar, Avila, etc.

By T. A. CHAPMAN, M.D., F.Z.S., F.E.S.

(*Continued from* p. 16.)

From Avila we came home, breaking the journey at Burgos and at St. Jean de Luz. At the latter place I took *Cyclopides morpheus*, a butterfly I had not before seen alive, otherwise very little of entomological interest was seen after we left Piedrahita. Piedrahita itself seemed at first very unpromising, being situated beside a great plain several miles wide and many in length, that was practically one field of corn. We guessed one continuous patch to be something like 1000 acres. From Piedrahita we made a day's excursion to El Barco, a village some two to three hours off, and of interest as affording a starting point for a portion of the Sierra de Gredos.

When we entered Piedrahita we were much interested to see something like a dozen Hoopoes in the poplar trees by the roadside, and in

Piedrahita there were several nests of storks on belfries. These we also saw on churches on the way to El Barco, and, in one field by the way, were twenty-four of these birds. On a belfry close to my bedroom window at Piedrahita was a great nest, where always were two of the great white birds in the evening, but they were always gone in the morning. Birds of many species were numerous in this region. Perhaps the most interesting item was at El Barco. Here the old castle has four sides and a great square court in the centre. This is now used as the campo santo of the village. When we went in to look at this we disturbed a dozen or two hawks, apparently kestrels ; some took wing and others kept their stations on the walls, but all more or less expressed their opinion of our intrusion in a deal of screaming. It was very obvious that they were allowed to live and nest here, and were never molested. They were indifferent to the natives, but we were some new and very possibly dangerous animal. Though Avila is on the regular route of the Spanish tourist, it is also worth a visit from the entomologist. It is a busy little place. The ancient walls, with their towers and gates, are in excellent preservation. The eastern end of the cathedral, forming part of the city walls and fortifications of the city, is very curious. Situated 3600 feet above sea level, it did not quite meet the hopes raised by Baedeker's statement that it is in a plain, surrounded by lofty mountains, the nearest being the eastern end of the Sierra de Gredos, here dwindled to a low-looking ridge, with no point 2000 feet above Avila within ten or fifteen miles, still the Sierras de Gredos and Guadarrama are at no very great distance on either side. There are some limestone outcrops near Avila, and near one of these which we detected, I found *Polyommatus corydon*, for the only occasion in our excursion, flying sparsely. The form is very close to the var. *hispana* taken last year at Cuenca and Albarracin, but rather smaller, and, instead of a tolerably uniform type, varies very much in the extent of the black marking. Another insect met with here was *Crambus cuencalis*, hitherto known from a single specimen taken by Korb at Cuenca. This was rare, amongst rushes growing in upland hillows, no trace of it being seen amongst rushes by the river Adaja. I found a cocoon of *Nudaria murina* in the cathedral ; it also occurred at Bejar. This cocoon is very slight, but has the larval hairs regularly disposed along either side so as to stand np as a crest, a very similar arrangement to that carried to great perfection by some Euchromias and other Syntomids.

In ascending the Sierra de Bejar our proceeding was to take the post or diligence to Candelario. In the diligence there always travelled an ancient Spanish gentleman, who was no other than the postman, and who, for some thirty-five years, had gone daily to and fro between Bejar and Candelario, carrying the mail in a leather pouch with the inscription "Ayuntamiento de Candelario." He wore a more thoroughly native costume than was to be often seen in Bejar, but such as was frequent in Candelario. He had never been to the top of the Sierra, or to any distance from Bejar. In Candelario itself the women all wear a special costume and dress the hair in a special way, of neither of which is any trace to be seen in Bejar, or in any other place we visited. The road to Candelario ascends the valley of the Cuerpo del Hombre, which, for most of the way, is in a narrow gorge, the rocky sides of which are clothed with various species of broom, especially *Genista* *florida*, close to Bejar, and higher up *Cytisus welwitschii*, with lavender, thyme, and many other aromatic plants. Here and there some oak scrub, with, of course, chestnuts and walnuts. Near Bejar *Heterogynis paradoxa* occurred on this road, and *Nomiades melanops* was perhaps the only butterfly more notable than such species as *Epinephele janira* ♂. From Candelario a very few yards takes one clear of trees out on to the bare top of a low foot hill, where the bare stony ground grew only a few aromatic plants. On this ground *Titanio pollinalis* var. *guttulalis* was frequent. Some 2000 feet higher up, in a damp almost boggy spot, another specimen was taken flying wildly at midday, that can only be *guttulalis*, but looks nearly twice the size of those taken below, and actually measures 24mm. in expanse, against 17mm. for those taken below.

Continuing up the Sierra we next crossed a short bit of level grassy ground, and then began the steady upward slope, at first gradual; but soon becoming rather steep, that continued to the top. For a good way this is over stony ground that is not screes, because it is hardly steep enough, here and there with more grassy portions, when a small but more or less permanent spring gave vegetation a chance, but for the most part continuing stony to the top, the size of the boulders increasing as we proceed, with occasionally rocky outcrops, and, towards the top, really large rocky boulders of many tons. Amongst these rocks and stones there is really a very considerable, and even varied, vegetation, but it is scattered and localised, and of small inconspicuous plants, so that one easily assumes that, except for the conspicuous broom, the ground is absolutely barren. After proceeding some way we reach the first scattered plants of *Genista purgans* and *Genista horrida*, both very handsome plants. In spite of their unattractive names they produce a grand effect *en masse*, and nothing can be more beautiful than a well-grown plant of either in full bloom. *Genista horrida* would no doubt be entitled to its name if you were comparing it with *Ulex europaeus*, as a thing to take a header into. At about 5000 feet these brooms become more abundant, and at 5500 to 6000 feet grow in dense masses. The *G. horrida* does not go much higher, but the *G. purgans* extends well up to 7000 feet. It is about here (5500 feet to 6000 feet) that *Erebia stygne* var. *bejarensis* occurs, quite freely in places, and at one (comparatively) small spot only *Heterogyna paradoxa* var. *candelariae* has its headquarters.

Except amongst these two species the net is not of much use to the lepidopterist till the summit is reached, after passing or crossing various snow patches. The top of this portion of the Sierra consists of various flat stretches of stony ground, with a bit of grass here and there and some mossy growth, and little else. When soaked by the melting snow the fine material between the stones makes the surface very soft, and, stony as it is, one sinks in almost as in a peat bog. When dry it is more like a fairly macadamised road, with larger stones lying about, and makes excellent walking. It was at the highest part of this, where some rocks and boulders protruded from the general level, that I met with a very black and glossy *Asarta*, which appears to be new, and which Sir George Hampson has christened *nigrella*. The first time I ascended the Sierra it was flying almost freely. I saw a score or more, but the wind was very trying, and the insects most active and almost impossible to follow on the wing, so that I only took four specimens. I never saw it again. Visiting the summit a few days after, when a calmer air gave me hopes of really making a bag, not a specimen could be seen. From this top one sees another parallel ridge close to, and perhaps a couple of hundred feet higher, and then a large gap in either direction to the Sierra de Gata in the west, with its conical summits, and the Sierra de Gredos eastwards, with higher rocky peaks and much snow.

The Sierra de Bejar thus yielded several interesting species, and was, I fancy, much more productive in coleoptera. Our method of working it, however, amounted to little more than a rush to the top and a rush back again. Camping out, or some means of spending a longer time near the top, would have given us much more satisfactory results. When I investigated *Heterogynis paradoxa* var. *candelariae* I, of course, spent the day in its habitats, and went no higher, and I saw then more *Erebia stygne* than when merely rushing up and down. The form of *E. stygne* flying on the Sierra de Bejar, at about 5000 feet to 6000 feet, over stony ground much covered by *Cytisus purgans*, was very large, nearly half as large again as the common Swiss form, and with the colours very bright and the ocelli well-developed, the underside being in the males very dark and black. As *E. stygne* has not been previously recorded from Spain, and as this very large form is previously unrecorded, I propose to call this variety *bejarensis*.

(*To be continued.*)

The Migration and Dispersal of Insects.*

By E. J. B. SOPP, F.R.Met.Soc., F.E.S.

We are sometimes told that, notwithstanding the vast amount of time and trouble expended on their production, the works of eminent entomologists appeal, after all, to but a section of the minority of the students of animal life. No such failing, however, can be laid to the charge of the latest of Mr. Tutt's many and varied contributions to entomological literature. *The Migration and Dispersal of Insects* * needs neither introduction nor commendation to the readers of this journal; nevertheless we should feel grateful to Mr. Tutt for having brought together and published in a convenient and accessible form the excellent series of instructive papers which have, at intervals, so long contributed to the increasing value amongst scientific monthlies of the *Entomologist's Record*. It is to be sincerely hoped that this little monograph, bristling with its facts of absorbing interest to all true naturalists, culled from various sources, and marshalled and reviewed by an entomologist of such acknowledged acumen as the author, will quickly find a place in the library of every student of nature. For the attractiveness of the subject presented to us should procure for it a large circle of readers beyond the specialists in the various orders—all of whom are catered for—students amongst the large and ever-increasing cloud of "irregular skirmishers" with which the main body of entomologists is being rapidly surrounded, who, although insufficiently equipped to be able to wax enthusiastic over subtleties in classification, varietal distinctions, and other technical minutiæ, are, nevertheless, keenly alive to the broader questions of distribution and habitat. Resolving the title into its component parts two points appear clear to us; firstly, that no possible doubt can exist as to the reality of the dispersal of insects in various ways, and, secondly, that notwithstanding the evidence of Scudder and others and the well-known habits of certain of the migratory groups themselves, the claim of the existence of any true migration in insects (as the term is understood in its application to birds) cannot be sustained. That it is non-existent it would, perhaps, be rash to affirm, but, with the evidence before us, we have no alternative but to return the verdict "not proven." That the migratory instinct is most powerfully developed in certain of the Dermaptera (Orthoptera), one of the lowest hexapodal orders, is of considerable interest and has been most happily referred to by Mr. Tutt. That a habit which is purposeful, marked, and comparatively regular amongst the least changed and least developed of the Insecta should often be only traceable as spasmodic and irregular movements in the more highly organised groups appears certainly suggestive that we witness to-day but the attenuated remains of a custom which was probably once present to a much greater degree in the earlier ancestors of the race. But we want more accurate knowledge of many present habits, more evidence as the result of organised systematic observation, and, perhaps, the greatest value of Mr. Tutt's brochure lies in the collection and arrangement of the numerous records of insect movements that have been preserved, which cannot fail to stimulate us to devote considerably more attention in the future than we have bestowed in the past to the elucidation of the problems presented. Any attempt on my part to review so excellently conceived a manual on so vast a subject would be little short of impertinence; but with the book before me perhaps I may be permitted to add a word or two on a matter that may lay claim to be included under one of the headings of its title.

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* *The Migration and Dispersal of Insects*, by J. W. Tutt, F.E.S. Demy 8vo., 132 *pp.* *Elliot Stock, 62, Paternoster* Row, E.C. 5s.

The dispersal of insects by wind and water is a matter which has often struck me as being singularly neglected by entomologists in the compilation of local faunistic lists. How seldom do we see any comment appended to the record of the capture of a species new to a district in any of the "Insecta notabilia" appearing from time to time in our periodicals. A short reference to recent prevailing winds or other meteorological and physical phenomena would often prove of considerable scientific value, not only by furnishing a clue to the direction from which the particular "addition" may have come, but by being always available for consideration in relation to other observations for the solution of problems which, by lack of any such data to work upon, are now of necessity left unprobed. Some years ago, when rowing from Worcester to Upton-on-Severn, a ladybird rescued from the river and placed in the hot sun on a seat of the boat took so long to show signs of vitality that, knowing the long period that these beetles can remain apparently unharmed in water, I am of opinion it had travelled a very long distance down the stream. Some six months after embarking on the study of entomology, in October, 1896, I happened upon (amongst other strangers to me on the Hoylake sandhills) a phytophagous beetle which my friend Mr. W. E. Sharp subsequently kindly identified for me as *Adimonia tanaceti*, L. This capture was interesting on two accounts, firstly from the fact that its supposed food-plant, *Tanacetum vulgare* (Fowler, *Col. Brit. Islds.*, iv., p. 331) is unknown in the neighbourhood, and, secondly, from its having previously only been recorded once from the district, Mr. Archer having taken a specimen at Wallasey many years before. Systematic search through that and succeeding autumns failed to produce another example, until, in September, 1899, whilst strolling along the Deeside dunes after one of the heavy westerly gales to which the Hoylake district is so prone, I was fortunate enough to pick up two more insects on the face of the bare exposed sandhills which rise from the shore. It will be recollected that this was one of the beetles met with in such numbers in Llyn du'r Arddu (Snowdon) by Mr. Brockton Tomlin and myself in August, 1900, and referred to by Mr. Tutt (p. 95); and from the fact of its occurring on other of the Welsh hills more adjacent to the Dee estuary I have no doubt in my own mind that both Mr. Archer's and my captures were wind-, or wind-and-water-borne immigrants from the adjoining principality. With regard to the food of this species, I may add that my wife discovered it on wild thyme on Snowdon, a plant on which we subsequently found it to feed readily.

To the many instances of unexplained voluntary flight enumerated by Mr. Tutt amongst the lepidoptera, etc., I can add that of the characteristic sandhill coleopteron, *Anomara frischii*, F. Towards the end of July, 1897, this chafer was fairly abundant locally for a week or ten days on the dunes above the submerged forest at Meols, and my wife and I daily visited the spot with the object of solving the mystery of their observed movements. The beetles commenced to appear from the sand and roots of starr-grass about ten a.m., reaching the culminating point of abundance each day between twelve and one o'clock. But the perplexing circumstance was that, within a short time from its appearance, each insect rose in the air and deliberately set off in a W.N.W. direction, over the dunes and out to sea. All the insects followed the same general direction, and chafers that were observed to fly towards an opposite quarter might have almost been counted on one's fingers. Whence went these would-be mariners, and for what purpose, since food was presumably abundant around them? In the first week of August, 1899, this beautiful chafer suddenly appeared in swarms, flying about an expanse of sandhills in Hoylake, now, alas! acquired by the speculative builder. The phenomenon lasted for two days, and, in a less degree, over the third, when so numerous were the insects that I several times caught three in my hand at a time. This abnormal abundance can, however, be in no way regarded as migratory, since I believe, as stated by Sharp (p. 94), in referring to the swarming of *Phyllopertha horticola*, Kirby, on the shores of Cardigan Bay, that every individual was bred on the spot, and that their phenomenal number would be due to a sequence of favourable circumstances "extending over," as he says, "perhaps more than one season."

In concluding a somewhat rambling note, that has already far exceeded the limits intended, I should like to suggest that, in addition to the excellent local work in which they are now mostly engaged, Entomological and Natural History Societies throughout the kingdom should combine to obtain material for the study of such important questions as those which Mr. Tutt has so pertinently placed before us—enigmas, which, like those of weather effect on insect life, the occasional phenomenal abundance of certain species in certain districts, and other complex and probably closely interrelated problems, can never be successfully attacked without the prior accumulation of a large amount of reliable facts, as the result of organised systematic observations, carefully carried out over a considerable extent of both time and country, rather than by the fitful, haphazard, and fortuitous "methods" at present in vogue.

Some genera of the Amorphid and Hemarid Sphingids.

By J. W. TUTT, F.E.S.

In *British Lepidoptera*, iii., p. 386, I have noticed Bacot's suggestions *re* the phylogeny of the Amorphid Sphingids, of which *Mimas tiliae*, *Smerinthus ocellata* and *Amorpha populi* are the three representative British species. Based on these suggestions, I drew up, for use in my work, the following tribal divisions of the subfamily *Amorphinae* :—

1. MIMANTIDI.—*Mimas* (*tiliae*).
2. SICHIIDI.—*Sichia* (*quercûs*), *Burrowsia* (*roseipennis*), *Kayeia* (*maackii*).
3. SMERINTHIDI.—*Daddia* (*kindermanni*), *Bellia* (*caecus*), *Smerinthus* (*ocellata*), *Nicholsonia* (*saliceti*), *Calasymbolus* (*astylus*).
4. CLARKIIDI.—*Clarkia* (*dissimilis*).
5. AMORPHIDI.—*Triptogon* (*modesta*), *Amorpha* (*populi*).

Before creating a number of new genera to illustrate my views of the relationships of the species, I enquired of the authorities whether generic names were available for the various subdivisions I suggested making, and was duly informed that, so far as could be ascertained, I should be perfectly justified in proposing the names *Sichia*, *Burrowsia*, *Kayeia*, *Daddia*, *Bellia*, *Nicholsonia*, and *Clarkia*, and I did so, naming them after well-known lepidopterists in the City of London Entomological Society. In a recent correspondence with Mr. Kaye, I learned that I had not been quite correctly informed about the matter, and that my genus *Clarkia* fell before *Phyllosphingia*, Swinhoe, *dissimilis* being the specific type of the latter and older genus, as well as that of my *Clarkia*.

Both the scope of my work and the space at disposal precluded my describing these genera at length, and I have been informed that the genera, being without descriptions, would, by some lepidopterists, be held to have no standing. On this rule (?) I hope to have something to say some day. However, to simplify matters, and in order to meet such objections, I have recently obtained the following generic diagnoses, and now publish them, so that the heathen may have less cause to blaspheme.

The list published (*loc. cit.*, p. 386), may be modified as follows:—

I. MIMANTIDI.—1. *Mimas*, Hb., *Verz.*, p. 142 (*circ.* 1822).—*Mimas tiliae* (type).

II. SICHIIDI.—1. *Sichia :* Palpi broad, very truncate when viewed from beneath, projecting level with head when viewed from above, dark brown in strong contrast to general straw colour of underside. Antennae in ♂ with exceeding strong pectinations. Forewing with very dentate hind margin. Hindwing very much less so, and hardly excised between vein 6, 7; beyond vein 7 evenly curved to costa. Forewing with central pale broad fascia, and with the transverse lines not sinuate and fairly straight. Abdomen robust—*Sichia quercûs* (type).

2. *Burrowsia :* Diagnosis not yet made.

3. *Kayeia :* Palpi rounded, not visible from above. Antennae with tufts of hair forming pectinations reduced to a few bristles. Forewing short (for

the tribe), tip rounded, not produced ; a moderately dentate margin ; a fascia broad at costa narrow at inner margin. Hindwing scarcely dentate, from anal angle to vein 4, rather shorter than beyond, with the appearance of a portion of wing removed. The extreme anal angle slightly produced. Abdomen slender—*Kayeia maackii* (type).

III. SMERINTHIDI.—1. *Daddia:* Palpi small, not visible when viewed from above. Forewing long and narrow, the tip rather produced between veins 6-8. Hindwing long, with the coloured scales extending well up to vein 7. The eye-mark at anal angle reaching margin of wing—*Daddia kindermanni* (type).

2. *Bellia :* Palpi extending almost level with head and larger than in *Smerinthus*. Eyes large for the insect. Antennæ in ♂ not robust with the pairs of tufts at the joints consisting of thin branches. Forewing short, greatly excised between veins 2 and 3. Hindwing with the coloration extending up to vein 7 (in *Smerinthus* it extends only to 6). Submedian line entire—*Bellia caecus* (type).

3. *Smerinthus*, Latr., " Hist. Nat.," iii., p. 401 (1802).—*Smerinthus ocellata* (type).

4. *Nicholsonia*: Palpi as in *Smerinthus*, short and rather bristly. Antennæ with the pectinations very strong in ♂. Forewing tip acute, a deep indentation between tornus and vein 4. Submedian transverse line very sharply toothed, but the " tooth " not extending any distance across the wing. Hindwing with margin very slightly indented, most conspicuously so immediately below the eye-mark at anal angle. The eye-mark with the " pupil " much smaller than in *Smerinthus*. Pink coloured scales extending up to vein 7—*Nicholsonia saliceti* (type).

Calasymbolus, Grote, "Bull. Buff. Soc.," i., p. 23 (1873).—*Calasymbolus astylus* (type).

IV. PHYLLOSPHINGIDI (= CLARKIIDI).—*Phyllosphingia*, Swinhoe, " Ann. Mag. Nat. Hist.," (6), xix., p. 164 (1897). *Clarkia*, Tutt, "Brit. Lep.," iii., p. 386 (1902).—*Phyllosphingia dissimilis* (type).

V. AMORPHIDI.—1. *Triptogon*, Brem., " Bull. Acad. S. Peters.," iii., p. 474 (1861). —*Triptogon modesta* (type).

2. *Amorpha*, Hb., "Tent.," p. 1 (1806).—*Amorpha populi* (type).

One other genus on which I lay stress is my *Cochrania* (*British Lep.*, iii., p. 503), with type *croatica*, placed by many with *Sesia* (*stellatarum*), and having all its affinities with *Hemaris* (*fuciformis*, *tityus*). The genus is well characterised by its "thick, smooth scaling in the imago," a most unusual Hemarid character. Its pupa, too, is "characteristically smoother than that of *Hemaris*, the wrinkles being very slight and almost evanescent on the abdominal segments, the face-spines forming very low mammillæ, the wing-cases very smooth, and the prespiracular ridges very marked on the 7th abdominal."

On Winglessness in Winter Moths.

By T. A. CHAPMAN, M.D., F.Z.S., F.E.S.

Having taken interest for some years in various species of moths whose females are apterous, and having satisfied myself, as nearly as one may satisfy oneself, about such a matter, as to the advantage the species seek to derive from their females having lost their wings, it has occurred to me to consider how far similar causes or objects had produced the apterousness of our winter moths.

The species I had chiefly investigated were species of *Notolophus* (*Orgyia*), of Psychids (macro- and micro-), and of Heterogynids. In all these cases the apterousness is associated with one peculiarity of habit, *viz.*, the eggs are laid on or in the cocoon or pupa-case of the moth herself. It is obvious that, if this be overwhelmingly the most desirable place for these species to lay their eggs in, wings would be not only useless but a strong temptation to, or at least risk of, great disaster by the female flying away from this most satisfactory position.

We see the transition to *Notolophus* in, say, *Porthetria dispar*, where the ♀ almost always lays a large batch of eggs close to her cocoon and before flying. Similar conditions are possibly dominant in the case of other apterous moths, of which I know little, such as some Arctiids, since in many species of moths, of which *Arctia caja* is one, the female usually lays a considerable number of eggs before making any serious use of her wings. If this first batch made its way in the world distinctly better than later ones, then *A. caja* would have taken the first step to having an apterous female.

Will these considerations help us to understand why the "winter" moths are apterous? Clearly, the explanation is not applicable as it stands, since all these apterous females of the "winter" moths, though wingless, have quite exaggerated powers of locomotion afoot, a condition precisely contrary to that which obtains in other apterous females, which have often lost their legs, as well as their wings, and, at any rate, as in *Notolophus antiqua*, make very little use of them. In *Heterogynis* the loss of pedestrian power has been very specially engineered, in view of the necessity of the female moth preserving an exact relationship with her pupa-case, *viz.*, the imaginal legs consist merely of an organic connection with the pupa-case, which is never severed.

Nevertheless, the explanation seems to me to be in very similar objects having to be attained, but under very different conditions. This explanation, when arrived at, seemed to me so obvious that I think it very likely it has been arrived at before, but if so I do not remember to have met with it. The labour of searching out references, if any are available, seems more than the subject is worth, especially as, in case the matter is not new, an independent suggestion will be confirmatory. It will probably, also, be new to many as it is to me.

What are the facts? These are tolerably well known; yet it may be better to recapitulate them. Confining our view to British species of moths which appear in the winter months, we have fifteen species whose females are apterous. How many we have whose females are not apterous is a more difficult matter. Species that hibernate are, of course, not in question, but the others grade so regularly into late autumn and early spring species that it is difficult to say which should and which should not be included. The following, at any rate, need to be considered:—*Amphidasys strataria, Himera pennaria, Cheimatophila tortricella* (*T. hyemana*), *Semioscopis avellanella, Lachneis lanestris, Poecilocampa populi, Asteroscopus sphinx, A. nubeculosa* and *Ptilophora plumigera*. There may be one or two others I have not thought of or erroneously excluded. These are nine species to compare with fifteen that are apterous—an overwhelming proportion when we recollect there are no apterous summer species outside the special cas[illegible] I have noted above. Of these nine some are, perhaps, rather early spring or late autumn than really winter, or, we may say, are in a transition state from one to the other. *A. strataria, H. pennaria, L. lanestris,* and *S. avellanella* are, perhaps, spring species; *A. sphinx* (*cassinea*) is probably an autumn one. Several of them, also, as befitting transition species, have some difficulty in fully developing the female wings, especially the hindwings, as *A. strataria* and *H. pennaria.*

The force of a winter appearance in producing apterousness of the female is further seen when we note that the fifteen species belong to at least five, possibly six, different groups, by which the apterousness must have been separately achieved, *e.g.*, we have the Hibernias and Nyssias (possibly one), *Anisopteryx*, *Cheimatobia*, *Chimabache*, and *Exapate*—three or four groups of Geometrids and two of micros. The only commonly received explanation of the apterousness of these moths is that the females, if provided with wings, would be very conspicuous on the bare twigs, and would fall a prey too readily to their enemies. They certainly do take advantage of their apterousness to hide away very successfully, but are they more successful than, say, the male of *C. brumata*, which is practically undiscoverable by day, even when it swarms.

I think there is little doubt that if wings were otherwise advantageous—*i.e.*, not definitely disadvantageous—the question of hiding would have been easily solved in some other way. For purposes of concealment and protection the wings of insects have undergone their most numerous and important modifications, in texture, size, shape, folding, markings, colour, etc., etc. The one, and, I fancy, the only, reason for getting rid of wings is not that they present difficulties and dangers, but that flight itself is definitely injurious. If flight is an advantage, any difficulties connected with the wings are of secondary, not primary, importance, and the wings are retained, but modified to meet them. To explain any case of apterousness, then, we must find some reason why flight is injurious. Any other dangers attaching to the wings may, in a minor degree, be an assistance in losing them, but by itself would not be an effective force.

The one thing the moth has to achieve is to lay her eggs in a satisfactory situation. In the Orgyias, Psychids, etc., wings were an evil, because they would take the moth away from the best place for laying her eggs. This is precisely the reason that has forced the "winter" moths to lay aside theirs.

These "winter" moths all belong to groups whose females lay their eggs on the foodplant, somewhere or other, and there is no doubt, in ordinary circumstances, such moths find the foodplant by scent. During the growing season all plants, doubtless, throw off an odour abundantly sufficient for this purpose. The moth flies from plant to plant to lay her eggs, finding her way—usually in the dark—by scent. But, how is it in the winter, when vegetation is dormant? Plants even then, probably, give off some scent, but it is, no doubt, so faint that a moth on the wing with the ordinary powers of one of our summer moths, would utterly fail to detect it. A moth that takes wing in the winter will then have great, probably insuperable, difficulty in again finding the foodplant on which to lay her eggs.

Our true "winter" moths got over it by losing their wings, and so avoiding the probability of going right away from the foodplant. But how is the moth to find the foodplant on foot? It emerges from the earth, and may tramp away anywhere. In the first place, however, it does do it, we know it does it, and does it easily and abundantly. Probably pupation takes place where this shall be tolerably easy, where the ordinary upward climb a moth does on emerging shall bring it to the stem of the required tree. Possibly at these close quarters scent is not altogether inappreciable. A large proportion then of the moths reach the foodplant they were reared on; a sufficient proportion fail to do so, to provide individuals to go in search of other quarters, which we know also they succeed very largely in doing; how, we do not quite know, whether they have some special instincts, or whether it is pure accident, and that the successes are only a small percentage of the failures we do not know. It is tolerably certain, however, that many larvæ and other insects have some faculty when on the ground for making their way to the nearest tree-trunk, and these moths have probably a good share of this mother wit.

The object of the loss of the wings, then, is to keep the moths tolerably close to the plant on which it was reared, or at least in the thicket or hedgerow, which probably contains many other plants of the same species. A fair or even large proportion will thus secure a proper place for laying their eggs, and the continuation of the species is secured. How about the winter moths with winged females, how do they meet this difficulty? The first question perhaps is, do they succeed in meeting it. I have suggested that some of them are really late autumn and early spring species, that manage their egg-laying just before vegetation sleeps in the autumn, or immediately it wakes in the spring. *Himera pennaria* is clearly in training for becoming apterous, it is on the margin, and keeps its place, partly by the females being averse to flying, partly by not emerging whilst it is absolute winter.

It is very possible that some meet the difficulty by a large increase in their powers of smell. *Poecilocampa populi* belongs to a group in which the sense of smell is remarkably developed, at least, so it is usually supposed; whilst *Ptilophora plumigera* has remarkably well-developed antennæ in the male, for no very obvious reason, since other winter moths require no increase of male smell-sense. These antennæ may then be a reflection to the male of the response made by the female to the necessity for increased olfactory power. These two species are certainly amongst the most definitely winter moths of the winged section.

COLEOPTERA.

NOTES ON COLEOPTERA TAKEN IN WIGTOWNSHIRE.—I am writing these notes on beetles collected at odd times in the hope that they may prove of interest to some few, from the fact that the county is quite unworked in that order, as far as I know, and that must be my excuse for mentioning the very common species. My thanks are due to Mr. Donisthorpe, the Rev. Mr. Gorham, and Professor Hudson Beare, who have most kindly identified many of the species. The only insect taken in January was a single *Niptus hololeucus*, Fald., flying by the roadside on the 25th. But in February more work was done. A pair of *Ptinus fur*, L., were taken on a window, several *Cychrus rostratus*, L., among dead leaves, and *Hypera nigrirostris*, F., and *Lathrimaeum unicolor*, Steph., under stones; rotten wood produced *Mycetoporus lepidus*, Gr., *Baptolinus alternans*, Pk., and *Drusilla canaliculata*, F. On tree stumps, *Dorytomus maculatus*, Marsh., *Apion frumentarium*, L., *Acidota crenata*, F., and *Elater balteatus*, L., turned up, and several *Geotrupes typhaeus*, L., were obtained, after a considerable amount of digging, from a large colony on a moor. Having nothing much to do in March I collected on every available day, taking, in rotten wood—*Loricera pilicornis*, F.;

Leistus fulvibarbis, Dj.; *Anchomenus fuliginosus*, Pz.; *Silpha atrata*, L.; *Ocypus brunnipes*, F.; *Homalota linearis*, Gr.; *Coccinella* 18-*punctata*, L.; and *Oxytelus rugosus*, F. Under stones in fields the following were obtained—*Leistus ferrugineus*, L. (the first seen); *Carabus catenulatus*, Scop.; *Dromius meridionalis*, Dj.; *Clivina fossor*, L.; *Badister bipustulatus*, F.; *Pristonychus terricola*, Hbst. (several); *Calathus cisteloides*, Pz.; *C. melanocephalus*, L.; *Anchomenus parumpunctatus*, F.; *A. prasinus*, Thunb.; *A. junceus*, Scop.; *Pterostichus anthracinus*, Ill.; *P. cupreus*, L.; *P. madidus*, F.; *P. nigrita*, F.; *P. strenuus*, Pz.; *P. striola*, F., *P. melanarius*, Ill.; *Amara apricaria*, Pk. (few); *A. trivialis*, Gyll.; *Harpalus latus*, L.; *H. aeneus*, F.; *H. ruficornis*, F.; *Bradycellus harpalinus*, Dj.; *Bembidium guttula*, F.; *B. lampros*, Hbst.; *B. littorale*, Ol.; *B. obtusum*, Sturm.; *Homalota circellaris*, Gr.; *H. fungi*, Gr.; *H. longicornis*, Gr.; *Phloeopora reptans*, Gr. (the only one seen); *Megacronus analis*, Pk.; *Quedius fuliginosus*, Gr.; *Q. rufipes*, Gr.; *Q. nigriceps*, Kr.; *Q. picipes*, Man.; *Ocypus cupreus*, Rossi (this used to be common, but was scarce this season); *Xantholinus glabratus*, Gr.; *X. linearis*, Ol.; *Othius melanocephalus*, Gr., *O. fulvipennis*, F.; *Lathrobium brunnipes*, F.; *L. fulvipenne*, Gr. A single specimen of *Lathrobium*, taken under a stone in a rough moorland field near here on March 21st, has been named by Mr. Gorham and Herr Ganglbauer as *atripalpe*, Scriba, which these authorities assert is only a variety of *terminatum*, Gr. Other captures under stones include *Cryptobium fracticorne*, Pk.; *Olophrum piceum*, Gyll.; *Choleva chrysomeloides*, Pz.; *C. cisteloides*, Fröh.; *Onthophilus striatus*, F.; *Agriotes obscurus*, L.; *A. lineatus*, L.; *Alophus triguttatus*, F.; *Hypera polygoni*, L.; *Liosomus ovatulus*, Clair; *Barypeithes brunnipes*, Ol.; *B. sulcifrons*, Boh.; *Otiorhynchus picipes*, F.; *O. septentrionis*, Hbst.; *Sitones hispidulus*, F.; *S. tibialis*, Hbst.; *Sciaphilus muricatus*, F.; *Barynotus obscurus*, F.; *B. schönherri*, Zett.; *Liopus nebulosus*, L.; *Chrysomela staphylaea*, L.; *C. polita*, L.; *Phaedon tumidulum*, Kirb.; *Aphthona cyanella*, Redt.; *Psylliodes napi*, E.H.; *P. chrysocephala*, L.; *Apteropeda graminis*, Pz. (one); *Cassida sanguinolenta*, F.; *Trechus minutus*, F.; *T. rubens*, F.; and *Hypocyptus longicornis*, Pk. On stones were taken *Rhynchites minutus* (not uncommon); *Apion nigritarse*, Kirb. (97 were counted on one stone); *Longitarsus holsatica*, L.; *L. melanocephala*, De G.; *L. atricilla*, L.; *L. brunneus*, Duft. (very plentiful); *Stenus declaratus*, Er.; *S. juno*, F.; *S. similis*, Hbst.; *S. unicolor*, Er.; and *S. providus* var. *rogeri*, Kr. In moss on oak and elm trunks *Dromius* 4-*maculatus*, L., was plentiful, and *Sitones puncticollis*, Steph., on sallow blossom at dusk. Beating fir trees produced *Hylobius abietis*, L.; *Strophosomus coryli*, F.; *Mysia oblongoguttata*, L., and *Luperus circumfusus*, Marsh., this latter is new to the Scottish list, Canon Fowler says it does not appear to occur north of the Midlands; while, on dead rabbits—*Tachinus subterraneus*, L.; *T. rufipes*, De G.; *T. marginellus*, F.; *Homalium rivulare*, Pk.; *Choleva nigricans*, Spence; *C. tristis*, Pz.; and *Ptomophagus sericea*, Pz., occurred. On the shore near Port William—*Ocypus morio*, Gr.; *O. olens*, Müll.; *Philonthus varius*, Gyll; *Helops striatus*, Fourc.; *Rhizobius litura*, F.; *Hypera plantaginis*, De G., were found; and on the 31st *Timarcha laevigata*, L., was seen in hundreds on the grass bordering the sea road, five or six on top of each other. In April I added the following—*Blaps similis*, Latr., from Whithorn; a dead rabbit produced *Staphylinus pubescens*, De G.; and a single *S. erythropterus*, L., was picked up on the moor; *Silpha rugosa*, L., swarmed on a dead hare, and *Necrophorus humator*, F., and *N. vestigator*, Hers., were found burying moles. A glass frame on the top of a hot-bed made up in the end of March was the haunt of beetles in swarms—*Stilicus affinis*, Er.; *Philonthus scybalarius*, Nord.; *P. discoideus*, Gr.; *Eumicrus tarsatus*, Müll.; *Monotoma picipes*, Herbst; *Anthicus floralis*, L., with the var. *quisquilius*, Th., were all plentiful, and in the garden itself *Philonthus splendens*, F. Under stones in fields I found *Notiophilus biguttatus*, F.; *Nebria brevicollis*, F.; *Amara communis*, Pz.; *A. spinipes*, L.; *Pterostichus versicolor*, Sturm; *Olisthopus rotundatus*, Pk.; *Tachyporus obtusus*; *T. chrysomelinus*, L.; *T. pusillus*, Gr.; *T. solutus*, Er.; *Hister cadaverinus*, E. H.; *Saprinus maritimus*, Steph.; *Mecinus pyraster*, Hbst.; *Otiorhynchus ligneus*, Ol.; *O. rugifrons*, Gyll.; O. *sulcatus*, F.; *Dyschirius globosus*, Hbst.; and *Psylliodes chalcomera*, Ill. In cow-dung were found *Aphodius ater*, De G.; *A. contaminatus*, Hbst.; *A. fimetarius*, L.; *A. prodromus*, Brahm; *Cercyon melanocephalus*, L.; *C. unipunctatus*, L.; *Aleochara fuscipes*, F.; and *A. lanuginosa*, Gr.; and on the shore of Luce Bay, among seaweed, *Cercyon flavipes*, F.; *C. littoralis*, Gyll.; *Myrmedonia limbata*, Pk.; *Creophilus maxillosus*, L.; *Cafius xantholoma*, Gr.; and *Homalium laeviusculum*, Gyll. Under stones above high water mark, *Dromius nigriventris*, Th.; *Corticaria elongata*, Gyll.; *Conosoma lividus*, Er.; *Amara ovata*, F.; *Otiorhynchus blandus*, Gyll.; *Aleochara fuscipes*, F., and *Corymbites aeneus*, L., of this latter I took a fine series, nine bronze, five blue, and one green with black legs, seven blue, one bronze, and one green with red legs. At the end of the month *Cicindela campestris*, L., appeared on sunny days in numbers on earthy hillsides, on the moors and slopes by the sea. In May the following were taken—*Liophloeus nubilus*, F., and *Carabus nemoralis*, Müll., under stones; *C. granulatus*, L., among heather; a single *Aleochara succicola*, Kr., in moss on a beech trunk; swept up among nettles, *Coeliodes 4-maculatus*, L., *Ceuthorhynchus pollinarius*, Forst., *C. quadridens*, Pz., and *Telephorus limbatus*, Th.; on the moor, *Sericosomus brunneus*, L., *Anthobium minutum*, F., in flowers; *Prasocuris phellandrii*, L., and *Donacia sericea*, L. (a fine range of shades), on marsh mallow; in cow-dung, *Sphaeridium scarabaeoides*, L., *Aphodius erraticus*, L., *A. rufipes*, L., *A. luridus*, F., the black ab. was not uncommon; *Nitidula bipustulata*, L., *Soronia grisea*, L., and *Omosita discoidea*, F., on dead birds on the moors; *Adalia bipunctata*, L., among grass on the shore; on the high roads, *Silpha opaca*, L.; *Philonthus laminatus*, Creutz, in a garden; and *Anthonomus pedicularius*, L., on a wall. *Polydrusus cervinus*, L., was found on poplar buds; and on stones on the shore of the White Loch, *Elaphrus cupreus*, Duft., *E. ripariùs*, L., *Hypera punctata*, F., *Haltica ericeti*, All., and *Longitarsis thoracicus*, Steph. *Gyrinus natator*, Scop., occurred in thousands in sheltered bays of Drumwalt Loch. In June *Epuraea aestiva*, L., *Meligethes aeneus*, F., *Athous niger*, L., *A. vittatus*, F., *Corymbites cupreus*, F., *C. tessellatus*, L., *Dolopius marginatus*, L., *Campylus linearis*, L., *Cyphon variabilis*, Thunb., *Telephorus bicolor*, F., *T. pallidus*, F., *T. rusticus*, F., *Malthodes dispav*, Germ., *Rhinoncus inconspectus*, Hbst., *R. pericarpius* F., *Ceuthorhynchus contractus*, Marsh., *Apion humile*, Germ., *Sitones lineatus*, L., *Lema cyanella*, L., *Crepidodera aurata*, Marsh., *Cassida viridis*, L., *Scymnus pygmaeus*, Fourc., were swept up among rough herbage and on the moors, together with a single *Helochares punctatus*, Shp., and *Philhydrus maritimus*, Th. *Adimonia capreae*, L., occurred in abundance near Loch Gower, and several large perch we caught were full of them. Under stones *Byrrhus pilula*, L., and *B. dorsalis*, F., and *Lema melanopa*, L.; *Neocrophorus ruspator*, Er., on a dead adder, and two *Corynetes rufipes*, F., on a dead gull on the moor; *Hylurgus piniperda*, L., on young shoots of firs; *Phyllobius argentatus*, L., *P. oblongus*, L., *P. pyri*, L., *Phratora vitellinae*, L., *Coccinella variabilis*, Ill., *Anaspis frontalis*, L., *Erirhinus acridulus*, L. *Orchestes fagi*, L., and *Dascillus cervinus*, by beating various trees; *Lampyris noctiluca*, L., ♀ s on damp nights in grass, ♂ s plentiful, buzzing round trunks of fir trees after dark. *Donacia menyanthides*, F., was common on water-lilies at Loch Chesney; *Cassida obsoleta*, Ill., on stones at White Loch; and *Aphodius fossor*, L., and *Plectroscelis concinna*, Marsh., on a road. After this, very little work was done in this order, all my spare time being devoted to lepidoptera. In July *Carabus nitens*, L., on the moor; and *Geotrupes putridarius*, *G. vernalis*, L., *Serica brunnea*, L., were taken at sugar; and *Rhangonycha fulva*, Scop., swarmed on hemlock. In August a pair of *Dytiscus punctulatus*, F., were found in a pool on the moor. In September *Cilea silphoides*, L., *Homalota xanthoptera*, Steph., *H. volans* came out of fungi in a wood. *Coccinella hieroglyphica*, L., and its black ab. were swept plentifully from heather; a single *Helophorus nubilus*, F., and *Hydroporus lepidus*, Ol., were taken on the margin of a pool near a stable, in which pool *Rhantus bistriatus*, Berg., *Colymbetes fuscus*, L., *Agabus bipustulatus*, L., *A. chalconotus*, Pz., *A. nebulosus*, Forst., *Dytiscus marginalis*, L., and *Acilius sulcatus*, L., var. *scoticus*, Steph., were also taken. In October two *Quedius fulgidus*, Gr., were found under stones in a field, and in November two nearly full-grown larvæ of *Melolontha vulgaris*, F., below some turf which was being removed in a gravel pit. All the above insects were taken mostly in the immediate neighbourhood of Corsemalzie, and I hope to add many more before long.—J. G. Gordon, F.E.S., Corsemalzie, Whauphill, Wigtownshire.

Coccinella 11-punctata var. brevifasciata, Weise.—Mr. Donisthorpe, in the last April number (p. 99) of this journal, drew attention to the fact that a variety of this abundant insect, with confluent basal spots, occurred commonly on sandhills at certain places on the Irish coast (see also p. 240 of the last volume of this journal). He stated that it was the var. G of Mulsant, and he himself proposed the name of *confluens* for it. It seems desirable, therefore, to call attention to the fact that another very similar variety (var. D of Mulsant and *brevifasciata* of Weise) has been taken (*Ent. Mo. Mag.* xxix., p. 70) by Mr. Chitty on the Culbin sandhills on the Moray coast, and apparently, also, by Mr. Walker (*Ent. Mo. Mag.* xxxii., p. 111), on the sandhills at Machrihanish Bay, in the Mull of Kintyre. This variety has confluent side spots, and Mr. Walker says it has a very different aspect from southern examples. It will be noticed that the Scottish localities for this variety are very similar to those for *confluens* in Ireland; the type form, also, did not occur with the variety. Both these varieties should be introduced into our catalogues.—T. Hudson Beare, F.E.S., 10, Regent Terrace, Edinburgh.

Notes of coleoptera captured during 1902.—My first expedition this year was on March 28th. On this occasion we—a party of five—

set out for Oxted and Limpsfield Common. From a small pond I managed to fish out with my hands a couple of *Haliplus lineatocollis* and one *Hydrochus angustatus*; I had no water-net with me or should certainly have found more. Two *Aphodius prodromus, Tachyporus hypnorum*, and one *Trichopteryx atomaria* (?) completed the list. On March 31st my father and I went to Ranmore. From a dead missel-thrush I took one *Philonthus cruentatus*, *Catops sericea*, two *Lathrimeum atrocephalum*, *Omosita discoidea*, ten *Silpha rugosa*, and a large number of *Proteinus ovalis*. In a pond near Ranmore Church I found *Agabus nebulosus* and two *Coelambus confluens*, one *Silpha atrata* in moss, a *Phyllotreta nodicornis* flying in the sunshine, and a few commoner species also turned up. A friend brought me six *Cryptorrhynchus lapathi* which he had taken on osiers near Streatham on April 19th. During the last week of April a few beetles were collected for me at Ilfracombe, among which were *Lema melanopa*, *Chrysomela marginalis*, *Eusphalerum primulae*, *Meloë proscarabeus*, and *M. violaceus*; both the "oil-beetles" were females, and very full of eggs. Whitsuntide I spent at Tilehurst, near Reading, and took, among others, the following:—*Phaedon armoraciae*, *Anchomenus albipes* (very common), *Blechrus maurus*, one *Cassida nobilis*, and *Dermestes murinus* with larvæ, and *Nitidula bipustulata* from a gamekeeper's "gallows." In June I bred a large number of *Dorytomus maculatus* from sallow-catkins, which my father had gathered for breeding Xanthiids and other moths. I also took a specimen of *Magdalis barbicornis* and two *Trox scaber* at Streatham. *Luperus rufipes*, *Deporaüs betulae*, one *Balaninus turbatus*, one *Choleva cisteloides*, and many others were taken at Wimbledon Common during the month. On June 26th we went to Coldharbour and Leith Hill; my captures included one *Elater balteatus* and *Lochmea suturalis* (on heather), and many commoner species. At Tilehurst a *Malachius aeneus*, *Cyphon coarctatus*, and some *Donaciae* (*limbata*, *vulgaris*, and *simplex*) from the banks of the Kennett were taken on June 29th. The beginning of August I spent in North Devon. At Ilfracombe I found *Trachyphloeus scabriculus*, one *Ocypus ater*, and *Oedemera coerulea* (of which the females were far more plentiful than the males). On August 2nd—the only wet day during the fortnight—I was at Woolacombe, and found *Lagria hirta*, *Aegialia arenaria*, *Calathus fuscus*, and *C. mollis* all commonly on the sandhills; *Heliopathes gibbus* also turned up, but the rain soon put an end to my collecting, and I had to return to the railway station, very wet, and wait two hours for a train back to Ilfracombe. At Torrington, on August 9th, I obtained, among others, a couple of *Harpalus neglectus* (under stones), and *Onthopagus ovatus* and *O. fracticornis*. One *Ocypus ater* and a *Harpalus tardus* from Woking, and some *Gymnetron antirrhini* from Bexley, were the only fresh species found until November 28th, when *Ptinus fur* turned up in a cellar in Birchin Lane, E.C. I may add that Mr. J. E. Robson sent me some Longicornes and other things recently, including one *Monohammus sutor*, four *M. sartor*, and one *M. titillator*, Fab., all taken by himself in timber-yards at Hartlepool. —J. Loftus Henderson, 7, Pinfold Road, Streatham, S.W.

NOTES ON COLLECTING, Etc.

VAGARIES IN THE EMERGENCE OF EUPITHECIA ABSYNTHIATA.—I have, during the past year been breeding *Eupithecia absynthiata* from ova obtained from a female taken here on August 10th, 1901. The first emerged on July 15th and on July 26th, 1902, then at intervals till August 28th, when no more emerged till one on November 12th, and there are still some living pupæ.—E. F. Studd, M.A., F.E.S., Oxton, Exeter.

Orrhodia erythrocephala at Boscombe.—Two *Orrhodia erythrocephala* were taken here last autumn, one by myself on October 14th, the other by Mr. Hooker on November 7th (not the 4th as previously stated).—(Major) R. B. Robertson, Forest View, Southborne Road, Boscombe.

Larger size of bred Nonagria neurica.—Last summer I visited the Norfolk Broads, hoping to unravel the pupal habits of *Nonagria neurica.* It is a mysterious little creature, and, as a full-fed larva, quite evades my efforts, and, in confinement, I lose many just at this stage. I am rather surprised at the very large size of the imagines I have bred, much larger than those I used to capture on the wing. Bred *Leucania brevilinea,* I thought, smaller than captured ones, but this years' results are fine and large.—E. A. Bowles, M.A., F.E.S., Myddelton House, Waltham Cross. *December 30th,* 1902.

Notes on the season 1902 in the North of Ireland.—Seeing the numerous unfavourable reports of the past season in English localities, I beg to send my experiences, hoping they will be of interest. Notwithstanding the cold spring and early summer months, insects were very abundant on any favourable days. On May 1st insects were in great force at sallows on the mountains near here, the following being noticed or taken—*Pachnobia rubricosa*, *Taeniocampa stabilis*, *T. instabilis*, *T. gracilis*, also hybernated *Calocampa exoleta*, *Scopelosoma satellitia*, and *Orrhodia vaccinii*, the only common insect that was scarce was *Taeniocampa gothica.* During May I also took *Cidaria suffumata* and ab. *piceata*, and *Larentia mulistrigaria.* On May 23rd I went to Churchill to work for *Bupalus piniaria.* It was a very cold day and the ground was covered with hail, but in spite of the weather I took *B. pinaria* in numbers, also *Tephrosia crepuscularia* (*biundularia*) at rest on fir-trunks, and beat out *Macaria liturata*, *Thera variata*, *Drepana falcataria*, and *D. lacertinaria* from birch. Whenever the sun shone *Callophrys rubi* was seen flitting among the birch trees. Another visit paid to Churchill on the 29th produced *Anarta myrtilli* and *Nemeophila plantaginis.* Sugar did not pay at all in June, but the flowers of *Lychnis flos-cuculi* were very attractive, the following insects being seen or taken at them—*Dianthoecia cucubali*, *D. conspersa*, *Plusia chrysitis*, *P. festucae*, *P. iota*, *P. pulchrina*, and one lovely *P. bractea*, and at the flowers of rushes, *Noctua brunnea*, *Apamea gemina*, *Mamestra pisi*, and *M. brassicae.* The following Geometrids were also taken—*Emmelesia decolorata* among campion, *E. albulata* among yellow rattle, *Melanthia albicillata* and *Cidaria silaceata.* Sugar did not pay much better in July, but, by working rushes and flowering grass, a good many common insects were taken, among others—*Leucania comma*, *L. impura*, *L. pallens*, *L. lithargyria*, *Noctua brunnea*, *N. c-nigrum*, *N. plecta*, *N. rubi*, *N. festiva*, *Agrotis segetum*, and *A. exclamationis*, whilst, among the Geometrids, the following were noticed—*Emmelesia alchemillata*, *Phibalapteryx lignata*, and *Aspilates strigillaria.* At sugar, in August, *Viminia rumicis*, *Thyatyra batis* and *Gonophora derasa* occurred, but searching heather bloom paid much better, the following insects being noticed or captured—*Agrotis agathina*, *Lycophotia strigula*, *Noctua glareosa*, *N. plecta*, *N. dahlii*, *N. xanthographa*, *Tryphaena ianthina* and *T. orbona*. On the mountains near here *Plusia interrogationis* occurred quite commonly at the flowers of the marsh-thistle, also *Habrostola tripartita* and *H. triplasia*, and at rush flowers *Charaeas graminis*, *Apamea didyma*, *Celaena haworthii*, *Citria flavago*, *Coremia munitata*, *Larentia caesiata*, *Emmelesia alchemillata*, *Eustroma testata*, *E. populata* and var. *musanaria*. A visit paid to the Magilligan sandhills, 40 miles from here on August 28th produced *Agrotis vestigialis*, *A. cursoria*, *A. tritici*, *Peridroma saucia*, *Actebia praecox*, all from ragwort flowers, also *Noctua glareosa*, *N. dahlii*, *Stilbia anomala*, and a single *Leucania littoralis*; at the end of the month the following were taken at light—*Hydroecia nictitans*, *H. micacea*, *Neuronia popularis*, *Cirrhoedia xerampelina*, *Calymnia trapezina*. During September *Vanessa io* and *Pyrameis atalanta* were very abundant, with a single *P. cardui*. The usual ivy-frequenting insects were abundant, also *Cidaria siterata*, of which I secured a nice series. At electric light appeared *Himera pennaria*, also later *Hybernia aurantiaria* and *H. defoliaria*. *Poecilocampa populi* also put in a welcome appearance at lamps here, the first specimen was taken on November 22nd, the last on December 20th. I have also taken the following larvæ here this season—*Amorpha populi*, *Smerinthus ocellata*, *Drepana falcataria*, *D. lacertinaria*, *Cerura vinula*, *Notodonta dromedarius*, *N. ziczac*, *Lophopteryx camelina*, *Leiocampa dictaeoides*, *Clostera pigra*, *Tryphaena fimbria*, and a great many common Noctuid larvæ.—T. Greer, Lassan, Cookstown, Co. Tyrone. *January 12th*, 1903.

Note on Emergence of Pœcilocampa populi.—A brood of *Poecilocampa populi*, of which the ova were laid on December 1st and 2nd, 1901, commenced emergence on November 1st and the last emerged on December 15th. The larvæ were all treated in the same way, sleeved out till nearly full-fed on sallow. The pupæ were kept out-of-doors, but under a roof, and were all in one cage. The emergence was very intermittent, on one day a dozen or so emerged, and then, after an interval of four or five days, or even a week, another would come out. After a week's interval, during which I thought the emergence was at an end, twelve and ten appeared on November 29th and 30th respectively, and then, after a fortnight, the last, a ♀, emerged on December 15th. Between 60 and 70 altogether emerged, one or two only being cripples, but several managed to spoil themselves. Mostly they emerged between 3 p.m.-4.30 p.m., and commenced flying almost as soon as their wings were dry, at early dusk, but some emerged between 7 p.m. and 8 p.m., and some, I think, in the early morning, but of this I am not quite sure, as I did not always look late at night. Some of the ♀ s were very large and very few of the brood were undersized.—F. C. Woodforde, B.A., F.E.S., Market Drayton. *January 1st*, 1903.

Date of appearance of Eupisteria heparata.—With regard to the time of appearance of *Eupisteria heparata* (*anteà*, pp. 344-345), in this district the imagines generally begin to appear about June 20th, and continue till about July 10th-15th, and those in my breeding-cages appear about the same date. In the New Forest I took some from May 25th-31st. I may add that *Asthena blomeri* in this district seldom appears before July 1st, and then only in very early seasons; July 15th-25th is about its normal time.—Ibid.

Extended duration of pupal stage.—With regard to the habit of pupæ lying over, is not this habit due greatly to climate? Do any species lie over whose period of emergence is between June 21st and August 30th, a period when the temperature is usually favourable? Certainly the species most liable to remaining in the pupal stage over twelve months are those which emerge in winter, spring, and early summer, such as *Lachneis lanestris*, *Petasia nubeculosa*, *Stauropus fagi*, etc. If some of the pupæ go over every season, the chances of some individuals coming out in favourable weather would be considerably increased in an uncertain climate like ours.—Ibid.

Forcing Acidaliids.—*Acidalia imitaria.*—About August 19th last, I obtained from a ♀ *A. imitaria* a batch of eggs, the larvæ from which I reared and from which I obtained imagines at the end of September and October. I kept the larvæ in bottles on the kitchen mantelpiece, feeding them on knotgrass, till they were about two inches long, when one or two pupated. I then put them in a flowerpot with soil in a rather cooler place. Those larvæ that pupated in the bottle were left there and kept in the kitchen, and emerged in the last week of September (all had pupated by the middle of that month). Those kept in a cooler place were still pupæ on my return home on October 18th. I then put the flower-pot on the kitchen mantelpiece, and, within a fortnight, the rest emerged, about three dozen in all. *Acidalia contiguaria.*—With the same treatment a brood of *A. contiguaria*, of which the ova were deposited at the end of September, emerged the first week of December, eighteen in all. These were fed on chickweed. *Acidalia rusticata* and *A. dilutaria.*—Small broods of *A. rusticata* and *A. dilutaria* (*holosericata*) treated in the same way, emerged in September, so I conclude the Acidaliids are not difficult to force through.—Ibid.

The time of appearance of Asthena blomeri.—I am much obliged for Mr. Bower's answer to my query (*anteà*, p. 345), as to the time of emergence of *Eupisteria heparata* in the southern counties, and for his list of dates. As I said before, it is most constant in its appearance here towards the end of May and by mid-June is over. *Asthena blomeri* also seems to appear much later in the midlands than here. I have seen it in plenty at Sledmere, on June 7th, but never later than the first week or two in July. Whilst visiting Mr. Woodforde at Market Drayton, I saw some, apparently fresh, on July 28th, and I believe Mr. Woodforde said that the species was not really over, so that evidently these two species emerge much earlier in this part of the country than in some others.—S. Walker, 15, Queen Anne's Road, York.

Extended pupal stage.—It may be well to add to the records (*anteà*, p. 341), that I had last June a specimen of *Lophopteryx cucullina* emerge, which had been in the pupal stage two years.—Ibid.

Cerura bicuspis in the Cromer district.—On September 10th, 1902, I took, in the neighbourhood of Cromer, a nearly full-fed larva of *C. bicuspis* on alder. I searched well for others but was not rewarded with a further find. For want of better accommodation the larva was kept in a tin box, and supplied with fresh alder leaves, upon which it fed well for nearly a week. On September 17th it ceased to feed, shrank a good deal in size, and spun up during the night on a piece of dried wood. Prior to pupation, it did not change to any extent in coloration, as would have been the case with a larva of *C. vinula*. I returned to London on September 20th, having, as luck would have it, to travel in a railway carriage which oscillated violently throughout the journey; I am, consequently, somewhat apprehensive as to the effect which this shaking up may have had upon the larva during its pupation.—A. RUSSELL, F.E.S., The Limes, Southend, near Catford, S.E. *January 24th*, 1903.

THERETRA PORCELLUS AT CROMER.—While at Cromer in September, 1902, I took about a dozen larvæ of *Theretra porcellus*. Most of them were full-fed and were found well down in the bedstraw upon which they had been feeding during the previous night.—IBID.

DATE OF APPEARANCE OF TAPINOSTOLA ELYMI.—I can corroborate Mr. Musham's observations as to the emergence of *T. elymi* on the Lincolnshire coast about the middle of June, as, on the only occasion on which I have come across the species—at Mablethorpe, on June 19th, 1896—I found it so abundant that I took fifty specimens during that one night. They were mostly quite fresh, but a few of them must, from their condition, have been out a week or ten days.—(REV.) G. H. RAYNOR, M.A., Hazeleigh Rectory, Maldon, Essex. *January 23rd*, 1903.

MELLINIA GILVAGO NEAR LINCOLN.—I was interested to read of Mr. Musham's capture of this species at Lincoln, but it is not new to that neighbourhood, as I used to take it commonly at Panton during my residence there from 1891 to 1896. I fancy it is of much wider distribution than is generally supposed, as I have found it almost everywhere I have collected among wych-elm (*Ulmus montana-pendula*).—IBID.

PRACTICAL HINTS*.

Field Work for Middle of February to Middle of March.

1. Early in March the imagines of *Amphysa walkerana* may be found on Scotch and north of England moors. The males fly freely in bright sunshine, but the females are extremely sluggish, and, therefore, require to be diligently searched for.

2. When the hybernated females of *Peronea ferrugana* are taken they are well worth retaining for ova, the moths appearing in July being more given to variation than those occurring in the autumnal emergence.

3. Roots of *Ajuga reptans* dug in localities where *Penthina fuligana* occurs and planted in seed-pans or shallow boxes will, in due course, yield imagines of this moth.

4. Last year's stems of *Impatiens noli-me-tangere*, if kept exposed to all weathers, should produce imagines of *Penthina postremana*.

5. Stems of *Onobrychis sativa* collected in the Deal district will supply larvæ of *Grapholitha caecana*.

6. *Phaeodes crenana* may be taken in early March on north of England and Scotch moors, flying freely in the sunshine from 10 a.m. to 1 p.m.

7. Roots and stems of *Centaurea nigra* should now be gathered for larvæ of *Ephippiphora cirsiana*. The roots may be potted very closely together.

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* "Practical Hints for the Field Lepidopterist," Pts. I and II, each contain some 1250 practical hints similar to these. Interleaved for collector's own notes. Price 6s. each part.

8. Where the stems of *Artemisia vulgaris* are broken off and the holes in centre covered with silk, larvæ of *Ephippiphora foeneana* may be judged to be present in the roots. The imagines are easily reared from potted roots.

9. *Ephippiphora nigricostana* can be bred in numbers by collecting dead stems of *Stachys sylvatica* and enclosing them in any suitable receptacle.

10. Fallen cones of spruce fir will, in due season, give plenty of *Coccyx strobilana* if gathered and confined in hat-boxes or small tubs.

11. *Heusimene fimbriana* appear about the middle of March, flying in the sunshine amongst oaks, and during dull weather may be obtained by beating.

12. Larvæ of *Eupoecilia servillana* occur in shoots of sallow, betraying their presence by causing gall-like swellings to arise. The imagines may be reared by placing the tenanted shoots in damp sand. A keen lookout must be kept for the moths, as they are active, and very soon injure themselves.

13. Old and prostrate stems of *Eupatorium cannabinum* may now be gathered if a supply of *Eupoecilia rupicola* be required. The stems should be kept out of doors, or any larvæ they contain may otherwise perish.

VARIATION.

ABRAXAS GROSSULARIATA AB. LACTICOLOR.—Mr. Prout, who has recently had an opportunity of referring to the figure in the *Berl. Ent. Zeits.*, (1901, pl. vi., fig. 10), of Huene's ab. *flavofasciata*, assures me that it corresponds in every respect to my ab. *lacticolor*. The latter name must therefore give way to the former, which has at least a year's priority.—(REV.) G. H. RAYNOR, M.A., Hazeleigh Rectory, Maldon. *January* 31*st*, 1903.

PLEBEIUS ÆGON AB. UNIPUNCTA, MOUS.—It may, perhaps, interest some of your readers to know that there are four male examples of this rare aberration in my collection from Erivan, Armenia, where the form occurs amongst the type. I have not yet observed the critical basal spot in European specimens.—Ernst Krodel, K. Postexpeditor I. Cl., Würzburg, Bayern, Germany. *January* 13*th*, 1903.

NOCTUA RUBI AB. FLAVESCENS.—The brood of yellow *Noctua rubi* referred to (*anteà*, vol. xiv., pp. 171-2), were successfully reared, although I did not get so many larvæ through the winter as I had hoped to do, but all that pupated emerged, and, without exception, were all yellow in colour and fine specimens. Thus, from two yellow parents, there was not a single reversion to the typical form. I tried to pair some of the latest emergences but failed, my failure being attributed, perhaps wrongly, to the inbreeding.—S. WALKER, 15, Queen Anne's Road, York. *November* 17*th*, 1902.

CURRENT NOTES.

Freiherr C. von Hormuzaki announces (*Soc. Ent.*, xvii., pp. 138-9), the form of *Zygaena* (*Anthrocera*) *trifolii*, Esp., from the mountain plateau of Lutschina (Bucovina) as a local race worthy of being separately named in the interest of precision in the study of geographical distribution, and proposes for it the name of var. *orientalis*. It is characterised by its large size, its strikingly small spots (sometimes reduced to mere dots) and the broad black margin of the hindwings, sometimes reaching to their middle.

A proposed new Entomological Exchange Club for the British Isles is under consideration by the City of London Entomological and Natural History Society, and suggested rules, on similar lines to those of the long-established and very successful Botanical Exchange Club, are published in the *Entomologist* for January (vol. xxxvi., p. 16). We understand that Mr. W. J. Kaye, F.E.S., Caracas, Ditton Hill, Surbiton, is anxious to enter into correspondence with lepidopterists who may be interested in the proposed movement, and invites further suggestions for carrying it into effect.

Herr W. Neuburger describes (*Soc. Ent.*, xvii., p. 155) a new aberration of *Gnophria rubricollis* as ab. *flavicollis*, Neubr. Its collar is bright yellow instead of red, and the ground colour of the forewings is more brownish (less black) than in the type. He has received a number from Dr. Ed. Fleck, from Azuga, Roumania.

The Officers and Council of the Entomological Society of London for 1903 are:—President, Professor Edward B. Poulton, M.A., D.Sc., F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S; Secretaries, Mr. Herbert Goss, F.L.S., and Mr. Henry Rowland-Brown, M.A.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of Council, Colonel Charles T. Bingham, F.Z.S.; Mr. Malcolm Burr, B.A., F.L.S.; Dr. Thomas A. Chapman, F.Z.S.; Mr. Arthur John Chitty, M.A.; Mr. Hamilton H. C. J. Druce, F.Z.S.; the Rev. Canon Fowler, M.A., D.Sc., F.L.S.; Professor Raphael Meldola, F.R.S.; Professor Louis Compton Miall, F.R.S,; the Rev. Francis D. Morice, M.A.; Dr. David Sharp, M.A., F.R.S.; Colonel Charles Swinhoe, M.A., F.L.S.; and Colonel John W. Yerbury, R.A., F.Z.S. It was announced that Professor Poulton, the new President, would appoint the Rev. Dr. Fowler, Professor Meldola, F.R.S., and Dr. D. Sharp, F.R.S., as Vice-Presidents for the Session 1903-1904.

At the annual meeting of the Entomological Society of London, held January 21st, 1903, Canon Fowler, the retiring President, in the first part of his address, dealt chiefly with many facts that have been recently brought forward with regard to cryptic coloration and mimicry, more especially as affecting the order coleoptera; the facts, he says, are indisputable, but the hypotheses founded upon them are, he considers, perhaps, sometimes pressed too far. In the second part, the question of the origin of the coleoptera was discussed. Canon Fowler states that there is no satisfactory evidence of the appearance of the Order in the Palæozoic period, but the leading families are found in the Lias, as completely differentiated as at the present time; in fact, many of the genera and even the species of coleoptera are almost identical with those now living and appear to have altered but little from the time at which they existed side by side with the gigantic extinct saurians and the pterodactyles; the whole question of the origin and history of the insects generally is of the first importance in the history of evolution.

The Hon. Secretary of the New Forest Natural History Society, which is under the Presidency of the Hon. John Scott Montagu, M.P. of Beaulieu, makes appeal to entomologists who visit the Forest to become members. Copies of the rules, etc., can be obtained from Mr. E. Morris, Brockenhurst.

ERRATUM.—Page 21, line 34, for "probable" read improbable.—B. H. CRABTREE.

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The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. February 26th, Paper, with Lantern illustrations, "Notes on a few days spent in the Emerald Isle," E. Step, F.L.S., and H. J. Turner, F.E.S. March 12th, Lantern Lecture, "Recent Researches in Protective Resemblance, &c.," Professor E. B. Poulton, F.R.S.; March 26th, "Holiday Notes from Amersham, Bucks," H. J. Turner, F.E.S.

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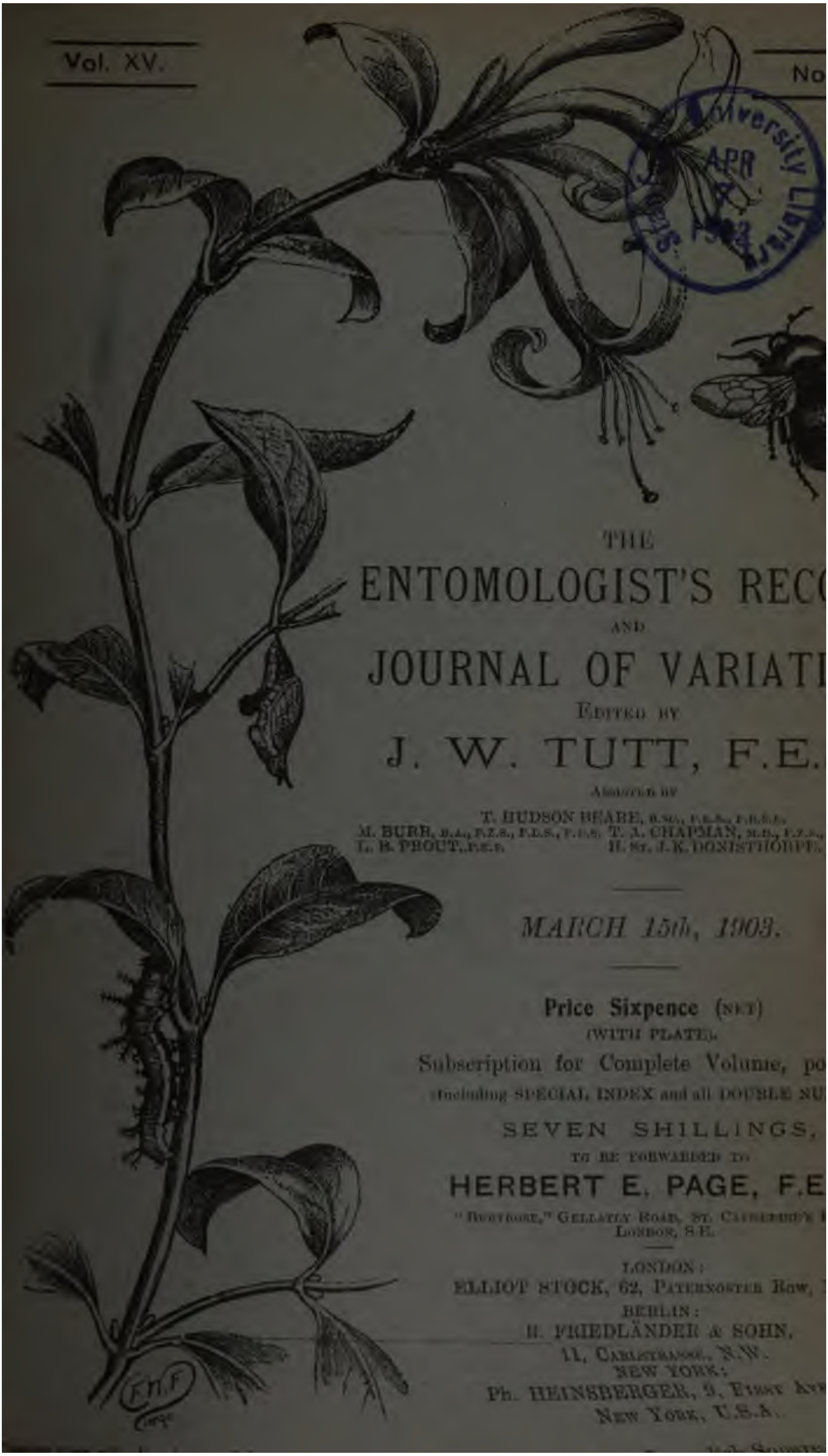

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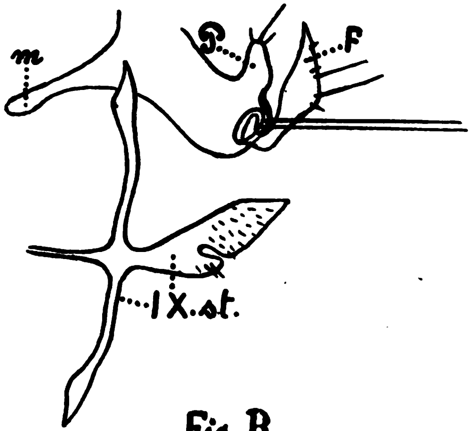

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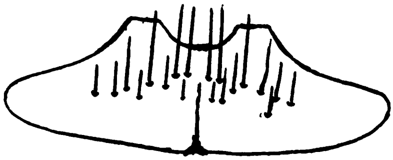

A New British Flea: Ceratophyllus londiniensis.

My First Impressions of Swiss Butterflies (*With Plate*).

By W. G. SHELDON.

I suppose most of us have indulged in fancies, more or less vivid, that we should like, given time and opportunity, to increase our knowledge of that most charming group the Rhopalocera, by extending our researches from the very small number of species found in these islands to those which occur in the Continental districts that are so far accessible as to be reached during an ordinary spring or summer holiday. At any rate, my thoughts had run that way for very many years; a fortnight spent on the Riviera during the spring of last year, and a short acquaintance with such gorgeous species as *Gonopteryx cleopatra* and *Euchloë euphenoides*, settled the matter once for all, and, instead of spending my summer holidays, as I had planned, in the Hebrides, I promptly made arrangements to pass them in Switzerland, where it is, of course, well known, that considerably more than half of the slightly under 300 species of butterflies that have yet been detected in the entire European area are to be found. Accordingly, accompanied by my son, I left London on June 24th last, having planned an expedition that would allow of seventeen days' collecting, returning to England on July 13th. One's thoughts of Swiss butterflies naturally centre in the small district comprising the upper Rhone valley and the mountains south of it, where are to be found nearly all the species that occur in the entire country, in most cases, in the greatest profusion, and, after reading up all the articles in the magazines that dealt with the localities we wished to visit, and availing myself of some very valuable information from Dr. Chapman, I wrote to the Rev. George Wheeler, to ask the order in which certain localities should be visited, so that we might best obtain one or two species we were particularly keen on. Mr. Wheeler not only very kindly answered my queries, but took a great deal more trouble in giving us the benefit of his unique experience, with the object that we should obtain the greatest possible number of species in the time at our disposal, and it is entirely owing to this that the large number of 112 species was obtained or observed, which, I fancy, constitutes something like a record. We are also much indebted to Dr. Chapman for very kindly naming the more doubtful specimens. We enjoyed throughout magnificent weather, and, with the exception of one day during the whole of which the rain poured incessantly, and one other day, which was showery, we had bright sunshine and blue cloudless skies from morning to night. These conditions, with the grand scenery one was amongst, and with the—to an English collector—extraordinary abundance and beauty of insect life, made the experience a most enjoyable one, and we both look forward in the hope that others may follow at no distant date. The season in the Rhone valley was an average one, and species were up to date and plentiful. In the mountains, however, the cold spring had left its mark, and many species we might have reasonably expected to come across in numbers were represented by odd specimens or not at all. We arrived late on the evening of June 25th at Aigle, and spent the night at the Hotel Beau Site. The next morning, after the usual unsatisfactory breakfast, we unpacked our apparatus and commenced operations in the woods around the Grand Hotel, a mile or so at the back of the town. Proceeding along a lane, a lively brown butterfly was soon spotted, and the younger and more active of us made the first capture, which proved to be a *Pararge maera*, unfortunately, with a wicked split in one wing, which made it quite unfit for the cabinet. Going into the woods, I netted a fine *Carterocephalus palaemon*, the only specimen seen by us in Switzerland, and saw one or two worn *Nemeobius lucina*. Insect life, however, in the thick woods was scarce, but presently we came to a portion that had been cut down the preceding winter, and things improved considerably. *Pararge maera* was here in numbers; huge *Aporia crataegi* came sailing by, easily recognisable by their flight from the "cabbagers" seen at home. It was my first experience of *A. crataegi* at large. Then, threading its way here and there, the tired-looking, gentle flight of *Leptidia sinapis* was unmistakable. These, with numerous Argynnids, contemptuous of one's best efforts with the net, sundry Melitæas, odd specimens of *Pararge egeria*, and the rays of the almost vertical sun pouring down upon us, made things quite warm enough. Getting tired of it after a while, we moved on until we came to some small meadows of uncut grass, where there seemed to be almost more butterflies than flowers. *Melanargia galatea* in hundreds, *Epinephele jurtina*, of course, in swarms, Argynnids again in dozens, and, thanks to the attractions of the flowers, more tractable; they proved to be *Argynnis niobe* ab. *eris*, *A. aglaia*, and *A. adippe*. Plenty of *Brenthis euphrosyne*, *Polyommatus alexis*, and a few *Colias hyale*. The farmer's house was near by, and for a time we gingerly skirted round the outside of the meadows, netting all we could from the path, but presently I happened to spy a *Papilio podalirius* in the middle of the field. This was too much for my patience, and I recklessly plunged in amongst the good man's grass, while my son made for a cloud of *Melitaea parthenie*, which haunted a corner of the same meadow. Our sport was soon put an end to by the owner, who very promptly and properly expostulated with us on the wickedness of our proceedings, and we had to travel. We soon came across another meadow, but the owner was evidently no friend of the brethren of the net, and a shrill whistle warned us what we might expect if we had the temerity to work his grass. Lunch time was now approaching; we made for the hotel, and during the afternoon left for Martigny, where we had arranged to stay three days.

Martigny is an ideal centre for collecting Rhopalocera. It is a small town with a few thousand inhabitants, situate in the Rhone valley, at a point where the river turns in its course almost at right angles. The valley itself is wonderfully rich in the lowland species, many of which are found in great numbers, whilst the mountains around, which are easy to work from the routes over the Great St. Bernard and to Chamonix, contain most of the alpine species found in Switzerland. The morning of June 27th opened bright and fine, and after an early breakfast we walked under the cliffs as far as the small village of Vernayez—about two miles—and back. That walk I, at least, shall pack away in my memory, and it will not be forgotten so long as I retain my faculties. There is a path leading just under the cliffs; at first it passes over some rough ground, then along meadows, with hedges of privet and wild rose; presently one comes to woods growing up the sides of the undercliff, whilst on the right is a marshy tract of country strikingly like a Norfolk fen, with its willows, its dykes, and reedbanks, and undergrowth, amongst which are many plants known in England, such as the loosestrifes, yellow and purple, vetches, &c., and, mixed with all this, one comes across patches of cultivation. The Rhone valley is here about a mile wide, and the mountains come down sheer on either side, almost like a wall several thousand feet high. Butterflies swarmed everywhere, and more wonderful to me than the number of specimens, even, was the number of species. Altogether we saw 55 species, of which no less than 35 are represented on the British list. When one considers that this constitutes more than one half of our native butterflies, and that at home about a dozen species is the best one can hope to obtain in a day at any time of the year, one realises the difference between collecting in Great Britain and in these more favoured regions. Immediately we left the main road, on the rough slopes, *Erebia stygne* appeared in some numbers, with the peculiarly slow flight of the genus, and with it was the fine copper, *Chrysophanus alciphron* var. *gordius*, which was common in both sexes, and of which we secured as many as we wanted; *Pararge maera*, *P. megaera*, *Papilio podalirius*, and *P. machaon*, with the whites—*Pieris brassicae* and *P. rapae*. A little further on *Aporia crataegi* was in swarms, each small blackthorn bush having its contingent of females depositing ova, and, amongst the grass in the meadows, *Melanargia galatea*, *Epinephele jurtina*, and *Enodia hyperanthus* were flying in countless numbers, and with them were numerous blues, including *Plebeius argus*, *P. aegon*, *Polyommatus astrarche*, *P. icarus*, *P. eumedon*, *P. bellargus*, *P. hylas*, *Nomiades semiargus*, *Lycaena arion*, and *Coenonympha pamphilus*, whilst, drinking at the damp places, were again the two before-mentioned Papilios, *Melitaea parthenie*, *M. athalia*, *M. dictynna*, *M. phoebe*, and the fiery *M. didyma*. In the clearings of the copses the Argynnids were found, including *Argynnis niobe* var. *eris*, *A. adippe*, *A. aglaia*, and, most welcome of all, the local *A. daphne*, with its lovely purple underside. But there were other species than the Argynnids here, including *Limenitis camilla*, of which my son netted two examples. One does not soon forget his first sight of *L. camilla* in flight, and, after turning it out of the net into the collecting-box, one comes to the conclusion that it is indeed "a thing of beauty and a joy for ever." Then there was the fine *Satryrus hermione*, our old friend *Polygonia c-album* in good condition, a battered *Euvanessa antiopa*, *Aglais urticae*, *Vanessa io*, and *Pyrameis cardui*; also worn *Cyaniris argiolus*, *Nemeobius lucina*, *Leptidia sinapis*, *Euchloë cardamines*, *Gonopteryx rhamni*, *Callophrys rubi*, *Pararge egeria*, *Argynnis lathonia*, and *Brenthis euphrosyne*. Passing the woods and nearing Vernayez, the rough slopes again appeared, and on them were, in small numbers, *Syrichthus carthami*, and a few *Spilothyrus lavaterae*, and, in the marsh itself, *Coenonympha iphis* and *C. satyrion* were not uncommon. In the afternoon we walked through the vineyards at the back of the Tour de la Batiez, and secured a short series of the local *Melitaea berisalensis*, with some more *Syrichthus carthami*.

On the morning of June 28th we walked across the meadows in the direction of Branson, crossing the Rhone at that village, and made for the spot famous for producing the very local and rare *Lycaena iolas*. On the way across the meadows one sees why so many of the Lycænids occur in Switzerland. The herbage is mainly composed of vetches and other papilionaceous plants, some of which we knew, but the great majority were strange to us. We picked up in plenty *Plebeius argus* and *P. aegon*, with odd specimens of *Polyommatus hylas* and a few worn *Colias edusa*. After crossing the Rhone, *Satyrus semele*, a fine dark form, much larger than ours, appeared; *S. hermione*, and *Argynnis niobe* var. *eris*, *A. adippe*, and others. Walking on, we came to a crazy wooden bridge, crossing a swift sluice, which would form a strong temptation to those of suicidal tendencies, and found ourselves amongst the little copse of *Collutea arborescens*, the foodplant of *Lycaena iolas*. Early as we thought ourselves we were forestalled; a collector from Geneva was in possession of the ground. He showed us his captures, which included two or three *L. iolas*; it, however, was not fully out, and, after waiting an hour or so and no more appearing, we left our friend to his sport and returned to the hotel. During the afternoon we again visited the locality for *M. berisalensis* and netted a few more of that species, and also a *Thecla ilicis*.

June 29th being again very fine, my son decided to visit the Val de Forclaz, which, we had been informed, was the haunt of *Limenitis populi* and *Araschnia levana*, whilst I was keen on renewing my acquaintance with the path to Vernayez. I found here much the same species as on the previous visit, considerably fewer in quantity, owing to the high wind. I, however, obtained a very peculiar aberration of *Melitaea dictynna*, female, in which the whole of those portions of the wings that are black in the type are of a grey tint—an instance of bleaching, I presume. During the afternoon I paid another visit to the *Collutea*, on the chance of finding an odd *Lycaena iolas*, and after waiting some time managed to net two very ragged examples. Returning to the hotel, I found there my son, who reported that he had seen numerous *Limenitis camilla* in a gorge, where it, however, had been impossible for him to catch any. He had a good number of *Erebia ceto* and some sundries, but had not seen either *Limenitis populi* or *Araschnia levana*.

On June 30th we left for Zermatt by the early train. This involved waiting some hours at Visp, but we occupied the time profitably by collecting along the road towards Brigue. Immediately after leaving the village, by the side of a swamp, we found the fine blue, *Polyommatus escheri*, quite commonly—males only—and about a mile further on one comes to a grassy knoll, noted for producing *Melitaea aurelia*, of which species we captured a few examples, together with some *M. parthenie* and *Argynnis aglaia*, also *Melitaea dictynna*, *M. phoebe*, and *M. didyma*. Of the journey from Visp to Zermatt, and from thence up to the Riffel Alp Hotel, some 7500 feet, from a tourist point of view, one could write a volume, but it is, I think, sufficient to say that, for a similar experience alone, I would willingly travel much further from home than Zermatt.

The morning of July 1st broke, as usual, bright and cloudless, and we sallied forth to enjoy our first experience of Alpine collecting. Immediately on leaving the hotel numbers of a Pierid were to be seen scudding along at a most unheard-of rate. After several futile efforts, my son captured one, and proved them to be *Pieris callidice*. We at once set to work in earnest, and, before the morning was well advanced, had netted quite a long series, including several females. An Erebiid next demanded attention. This proved to be *Erebia lappona*, in good condition, and fairly plentiful. Apart from the difficult nature of the ground it frequented, *E. lappona* was an easy species to negotiate, and we did well with it. I then came across an odd specimen each of *Melitaea aurinia* var. *merope* and the striking male of *M. cynthia*; my son also snapped up a fine female *Colias phicomone*, whilst *Syrichthus fritillum* var. *alveus*, and *S. malvae* were in some numbers, the latter indistinguishable from our British examples. We walked up the Riffelberg to the Gornergrat, 10300 feet, but the whole mountain was still covered with deep snow. This was a great disappointment, for had the season been normal, one might have expected here some of the best collecting of the holiday. I did see one Erebiid at the Gornergrat, which, I suppose was *E. lappona*, as it was too early in the season for *E. glacialis*. July 2nd was a broken day, cloudy and showery, and we could only, during a fairly long walk, meet with one *Polyommatus orbitulus* and one *P. eumedon*. In the afternoon we left for Loeche and the Pfynwald.

On July 3rd, the rain and clouds had cleared off. After breakfast we crossed the Rhone at Loeche and walked towards Varen. Here, along the roadside, a truly magnificent Satyrid was in some numbers—*Satyrus actaea* var. *cordula*, males only, jet black, with a wondrous bloom, and with white pupilled ocelli, somewhat resembling a huge *Enodia hyperanthus*. Flying with this species were *Brenthis ino*, *Argynnis latona*, *Brenthis dia*, *Polygonia c-album*, and some Melitæas, several of which Dr. Chapman, to whom I submitted them on my return home, pronounces undoubted *Melitaea berisalensis*, and others intermediate between that species, or variety, and *M. athalia*. The locality from which these specimens were obtained lies amongst vineyards, and is very similar to the well-known one for *M. berisalensis* at Martigny.

It is greatly to be deplored that we English collectors have so little reliable literature dealing with these puzzling species of *Melitaea*, or forms, whichever they are. I allude, of course, to *Melitaea athalia*, *M. parthenie*, *M. berisalensis*, *M. aurelia*, *M. asterie*, *M. dictynna*, and *M. deione*. My personal experience only extends, at present, to *M. athalia*, *M. aurelia*, *M. parthenie*, *M. berisalensis*, and *M. dictynna*. The latter, so far as the localities I collected in enabled me to judge, appears distinct as a species, but, in the absence of other evidence, I should consider the others to be forms only of one species, and I think that is the general opinion. One must not forget, however, that our knowledge only applies to one stage—the imago—and that we English, who only pay fleeting visits to the haunts of these Melitæas, are almost if not absolutely ignorant of them in the oval, larval, and pupal stages,* and that we have species of our own, such as *Cidaria truncata* and *C. immanata*, which are certainly distinct, but which cannot, in all cases, certainly be differentiated in the imago state. What is wanted is a monograph embodying the researches of those lepidopterists who live on the spot where these species occur, and who have studied them in all stages. *Polyommatus escheri*, again, was not uncommon around the manure heaps in the village of Loeche, and with them was taken one female *Nomiades cyllarus*, with inferior wings, underside spotless, and three spots only on the superiors. The afternoon was devoted to a visit to the famous Pfynwald. I cannot say it was a success; the special species we came for, *Apatura ilia*, was not in evidence. We obtained plenty of *Melitaea parthenie*, more *Argynnis lathonia* than were observed elsewhere, a few male *Dryas paphia*, and very little else.

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* That this is so is simply a disgrace to our English collectors. If each would do his share in getting and describing material to supply the lacunæ in our knowledge of the early stages of these species the matter would be easy. We have ourselves obtained a large number of eggs of European Rhopalocera and described them, in spite of the temptation to be off the next morning to the mountains, collecting more and ever more imagines. Suppose a dozen of us, during the summer of 1903, set seriously to work to describe the ova of only six hitherto undescribed species—those who stay a long time might easily do more—our knowledge of the oval stage of the central Alpine Rhopalocera would soon be as complete as our knowledge of the imagines. We are doing, really, in spite of the increased numbers in which we visit the Continent, very little towards getting a knowledge of the fauna. The Swiss entomologist who stood all day at a patch of *Collutea* to catch all the *L. iolas* he saw, would have been much better at work trying to find a ♀ laying its eggs and getting a description thereof, afterwards giving a full account of the larva.—Ed.

On July 4th we took train to Sierre, where *Syrichthus carthami* was very abundant, and with them were a few *S. sao*, specimens of *Papilio machaon* and *Pyrameis cardui*, *Pieris daplidice*, and one *Satyrus* var. *cordula*, female, was hustled out of a willow thicket on the banks of the Rhone. It was the only female taken, and the only example of the species we saw at Sierre. Mr. Wheeler had advised us to try for *Melitaea maturna* at Nione. We, however, missed our way, and only got as far as Chippo. Here my son netted the only specimen of *Erebia ligea* we were destined to take, and we found *Chrysophanus* var. *gordius* not uncommon, but worn.

On July 5th we journeyed on to Berisal, where we had arranged to stay a week. We did some collecting at Brigue on the way, under the cliffs along the banks of the Rhone. Here we found *Brenthis dia* in some numbers and variable, also *Melitaea parthenie*, with some remarkably *aurelia*-like forms, *Argynnis niobe* var. *eris*, *Polygonia c-album*, *Melitaea didyma*, *Thymelicus thaumas* and *T. lineola*, *Lycaena arion*, *Spilothyrus lavaterae*, *Colias hyale*, and my son netted a fine *Colias* var. *helice*. Most readers of this magazine who take an interest in European rhopalocera are well posted up in the species that are to be taken at or near that glorious spot, Berisal; glorious both for its collecting and for the truly magnificent scenery amidst which the hotel is situated.

The season was a very backward one at this height—about 5000 feet—and we were a fortnight too early for many species we might have expected to be right for, consequently they were obtained in small numbers only. However, there were others that, in an ordinary season, we should have been too late for, and as we are looking forward to another visit next year at a somewhat later date, they will probably be obtained then. The views which have been reproduced on pl. ii, and which accompany this article, are from negatives taken by my son, and will give a general idea of the locality and the ground collected upon. The upper one is a view of the hotel. The road over the Simplon Pass was made by Napoleon Buonaparte. At intervals of about two miles he built refuges, where travellers could obtain shelter and refreshment. The third refuge, counting from Brigue, was formed at Berisal; this is now used as a restaurant in connection with the hotel, and is the building at the extreme left of the photograph. The others represent the remaining portions of the hotel. They appear to have been added at different times, and form, as a whole, a most delightful rambling old place. We found the proprietors most obliging, the cuisine excellent, and the *pension* terms could not be considered anything but moderate. The meadow in front is the chosen haunt of *Pieris napi* var. *bryoniae* and swarms of *Parnassius mnemosyne*. We found staying here Mr. E. F. S. Tylecote, and had the pleasure of his company and experience in most of our collecting. The second view is taken from above the fifth refuge, and looks down the pass towards the Rhone valley at Brigue. This is one of the best localities for collecting in the district, and is the haunt of *Parnassius delius*, the beautiful *Colias palaeno*, *C. phicomone*, *Melitaea cynthia*, *Brenthis pales*, *Polyommatus pheretes*, and many other Alpine species.

One of my first visits was to the second refuge for *Plebeius* var. *lycidas*. On the way down the Ganter valley I saw, for the first time, *Parnassius apollo*—once seen never forgotten; that lazy, yet powerful and most graceful, flight; rising and falling and floating, travelling at a great pace, with hardly the flap of a wing. The species was common, and with it were plenty of *Aporia crataegi* (at this height in grand condition), *Melitaea didyma* and var. *alpina*, *M. phoebe*, *Erebia ceto*, *E. euryale*, *Nomiades semiargus*, *Polyommatus escheri*, *P. hylas*, *P. icarus*, *P. astrarche*, and *Plebeius aegon*, and a few *Erebia evias*, *Melitaea parthenie* and var. *varia*, *M. dictynna*, *Argynnis lathonia*, *A. aglaia*, *Satyrus semele*, etc. Arrived at the *lycidas* ground, I found the insect fairly abundant, and had no difficulty in securing a series. On the morning after our arrival we turned out before breakfast into the meadow adjoining the hotel for *Parnassius mnemosyne*, which, at that early hour, was flying in numbers and in good condition, and with these were a few *Pieris* var. *bryoniae*. Between Berisal and the fourth refuge, and at the latter place, we found *Pararge hiera* not uncommon and in fair order, *Pieris* var. *bryoniae*, *Oeneis aello*, *Papilio machaon*, *Polyommatus eumedon*, *Lycaena alcon* (one female), and *Erebia tyndarus*; whilst in the flowery meadows between the Ganter bridge and the second refuge, above the road, the brilliant *Chrysophanus hippothoë* var. *eurybia* occurred, with *Papilio podalirius*, and hosts of *Parnassius apollo*. We made one expedition to the Steinenthal, a locality so well known to Mr. Wheeler. The Steinenthal is a ravine which has its lower outlet leading into the Ganter valley. The entrance is a very steep path leading up a gorge, which does not show on the view of Berisal given, but the Steinenthal itself is at the dip in the profile of the mountains in the centre of the view. The mountain on the left hand with a considerable growth of larch and fir is the lower portion of the Steinenalp. We expected to find *Lycaena alcon* and *Polyommatus orbitulus* at the entrance to the gorge and in the Steinenthal valley itself, but not a specimen was seen. *Erebia evias* was not infrequent in the gorge, and in the Steinenthal a few *Syricthus fritullum* var. *alveus* were netted. I made at once up the side of the Steinenalp and climbed to the top—a very steep pull of, I suppose, nearly 2000 feet—imagining I should then find the alpine Coliads. Nothing, however, was flying on the peak except a few *Pieris callidice* and a pair of *Papilio machaon*. Returning, I found *Œneis aello* common on the steep side of the alp. Seeing *Œ. aello* here, however, is a very different matter from catching one, and I got very few specimens. I did, however, net a fine fresh *Erebia mnestra*. Returning to the Steinenthal, I found that Mr. Tylecote had been more successful with the Coliads, having taken a fine *C. palaeno*, whilst my son had obtained a few *C. phicomone*, all males.

His best capture, however, was a fine *C. edusa* var. *helice*, which was flying high up the side of the Steinenalp ; surely a strange locality for this, being well over 7000 feet. We had a successful day at the fifth refuge. We worked the ground shown in the second photograph, above the road. Here the great creamy, lazy-flying *Parnassius delius* was in some numbers, including one female, which fell to my son. Then the Coliads were in evidence. *Colias phicomone* was fairly abundant. I made a wild overhead shot at something that was coming down hill at express speed, and found, to my great delight, that I had netted a fine male *C. palaeno*. The first sight of the lovely crimson fringe of this charming species is not easily forgotten. We also obtained specimens of *Brenthis pales*, *Polyommatus pheretes*, *Chrysophanus* var. *eurybia*, *Erebia gorge*, *E. tyndarus*, *Melampias epiphron*, *Anthocharis belia* var. *simplonia*, and *Coenonympha arcania* var. *darwiniana*. *Brenthis euphrosyne* was abundant.

Our last day in the district was spent at the top of the Simplon Pass. *Colias phicomone* was abundant—all males, however—and of *C. palaeno* we netted a dozen fine specimens, half of each sex, and including a perfect yellow female, var. *werdandi*, I believe. *Brenthis pales* was frequent, also *Melitaea aurinia* var. *merope*, and *M. parthenie* var. *varia*. My son took two fine *Parnassius delius*. *Pieris callidice* was common, and we obtained specimens of *Erebia lappona*, *E. gorge*, *E. tyndarus*, *Lycaena arion* var. *obscura*, *L. alcon*, *Polyommatus orbitulus*, *P. optilete*, not, however, in good order, and *Coenonympha* var. *darwiniana*. *Brenthis euphrosyne*, was, however, the most abundant species seen, and was quite fresh.

The next day, July 12th, we left Brigue by the early morning train, getting off at Aigle, with the object of obtaining, if possible, *Apatura iris* along the Le Sepey road. We were not successful in this, although each of us did see one specimen, but we found many other things we were in want of. The most abundant species seen was, undoubtedly, *Thecla ilicis*, which was sucking the flowers of lime trees and also wild thyme in great numbers, and was in good condition. *Satyrus hermione* was abundant, sitting on rocks or in the road, and the males of *Dryas paphia* made a good show. We obtained about a dozen of a much wanted insect, *Pararge achine*, in good condition, and amongst other species taken were *Polygonia c-album*, *Parnassius apollo* (common), *Limenitis sybilla*, *Thymelicus thaumas*, *Pamphila sylvanus*, and *Argynnis adippe*. The brilliant *Polyommatus damon* was just appearing, and we bagged two perfect males; the same remark applies to our old friend *P. corydon*, of which we obtained three or four males.

After dining at Lausanne we travelled straight on to London, arriving on the evening of July 13th, having spent, certainly, the most enjoyable and interesting entomological holiday of my experience.

A New British Flea: Ceratophyllus londiniensis. (*With Plate*).

By Hon. N. CHARLES ROTHSCHILD, M.A., F.E.S.

Ceratophyllus londiniensis, sp. nov.—This species is allied to *C. fasciatus* and resembles that insect in the absence of the eighth sternite in the male. It differs, however, in being much smaller and paler, and having more lateral bristles on the hind tibia. The sexual apparatus of the male, moreover, and the seventh and eighth abdominal segments of the female are abundantly distinct from those of *C. fasciatus*.

The ninth tergite of the male is drawn in figure A. The manubrium (M) is shorter than that of *C. fasciatus*. The process (P) is boot-shaped and bears at the apex three bristles, of which one is longer than the process. The "movable finger" (F) is much longer than that of *C. fasciatus*. It bears, as in that species, two long ventral bristles and a few small ones in addition. The two long bristles have a different position from those of *C. fasciatus*, being much more proximal in position. The distance between the second bristle and the pointed apex of the finger is, in fact, more than twice as great as the distance from one bristle to the other. The ninth sternite (ix st.) is deeply sinuate ventrally. It bears many hairs, which are very small, with the exception of one or two on the proximal lobe close to the sinus. The seventh sternite of the female is drawn in figure B, the drawing representing the sternite flattened out in one plane. This sternite is mesially sinuate, the two lobes being truncate, while each side bears about nine bristles. The eighth tergite of this species bears fewer hairs than that of *C. fasciatus*, there being only two long bristles on each side below the stigma. Length, ♂, 1·9 mm.; ♀, 2·5 mm.

A large series of this insect was received in May, 1900, from South Kensington, London, taken from *Mus musculus*. I originally considered it to be identical with *Ceratophyllus consimilis*, of Wagner, but Dr. Wagner states that a photograph of the sexual apparatus of a male of the present species, differs markedly from the same portion of his type.

Explanation of Plate III.

Fig. A.—Clasper and ninth sternite of ♂; M = manubrium; P = process; F = finger.

Fig. B.—Seventh sternite of ♀.

Sherborn's "Index Animalium."

By LOUIS B. PROUT, F.E.S.

In reply to my notice (*anteà* pp. 13-14), Mr. Sherborn has sent me the following important communication:—

"I am much interested in your excellent notice, in which you give critical notes of real value to me, in that they raise points which are often evaded, and on which it is difficult to secure agreement among entomologists. Generally speaking, your notice raises the simple question, whether the binomials of a multinomial author should be accepted. I think not, for the reason that, because the author finds two words happen by accident to express his ideas of a diagnosis for a certain form, it does not in any way show that he understood the Linnean view of nomenclature as set forth in the tenth or twelfth editions. I think, also, it should be urged that we cannot have one set of rules for the lepidopterologist and another set for the coleopterologist, any more than we can have one set for the entomologist and another for the mammalogist. In all the cases of binomials used in multinomial books I tried to get opinions (as you will see from the papers I sent you on Goeze), and it was most difficult to get any one to give a definite opinion. For that reason it was often left for me to decide on the whole, not a part, of a work from the evidence available. May I deal with your points seriatim?

1. Gladbach, *Beschreibung*, 1777.—If you accept "*Phalaena tinea chrysanthemi*," on p. 32, why not accept "*Sphinx culiciformis cum angulo rubro*" on p. 61?

2. I did not realise that Gladbach's *Namen* was published in 1778. Perhaps you are right, but he may have used his binomials with the same freedom in 1778 as he did in 1777.

3. Goeze, *Entom. Beyträge*.—I had done all the slips for the lepidoptera in this book, but found that the coleoptera portion had quadri- and quinque-nomials. As it was left to my discretion (see correspondence) I had no option but to decide against it.

4. Geer, Charles de. We do not say "of Salisbury" but "Salisbury." See Linnström, H.—*Svensk Bok-Lexicon*, 1883, where he is catalogued as Geer. I do not think this is quite a parallel case with Goeze.

5. Retzius.—I was, and am still, very doubtful about this book, and on the whole am inclined to regret its inclusion.

6. Kuehn, *Beschäftig. Berlin*, iii., 1777.—I find that he uses the names:—

fig. 8. Pentadactyla aurantia.
fig. 7 & 9. ocella flava.
fig. 10. Phalaena marmorea.

I do not think we can quote his *Tinea scalella* in the face of such a jumble.

7. It has always been a mystery to me why any person should doubt Linnæus' views as to his genera of lepidoptera. They are clearly "*Phalaena*" and "*Papilio*," and nothing else (but *Sphinx*). In his *Syst. Nat.* (editio duodecima reformata), at the end of Tom. I, pars 2, we find "Nomina generica," "Nomina trivialia Papilionum," and "Nomina trivialia Phalænarum," each of which is definite enough. Gmelin also takes no heed of the "phalanges" of the genera of Linnæus, in his index. On this matter consult the divisions made by Linnæus of his genus *Gryllus* in the 10th ed. of the *Syst.*, compare it with those in the 12th, and afterward with his divisions of his genera *Cicada*, *Salmo*, *Simia*, etc. We must treat these things as a whole and not from one standpoint. I have been amused more than once to find that those who have argued over Linnæus' genera of Lepidoptera had not known that he had given an index to his book.

I am very pleased that you have raised these questions, and if you think this reply is of any interest I shall be glad if you care to print it as an expression of opinion."

I need only add that I think it will be well if all will agree to the principle of rejecting all incidental binomials in "multinomial books," and I shall be quite ready to relinquish Gladbach's "Beschreibung" and Kuehn's "jumble"; but I am still by no means convinced that we have any right to set aside Goeze's third volume. The "correspondence" which Mr. Sherborn most kindly submitted to my inspection seems far from decisive, or, at least, it does not touch the claims of vol. iii, which does not seem quite on a footing with the earlier volumes, if one may judge by the opinions of some prominent coleopterists. Goeze's work is very valuable as providing a true binomial nomenclature for many of the species so excellently described by Degeer and other early authors, and, therefore, forms a far sounder basis, in many cases, than the poorly-diagnosed species of Fabricius and many other writers of the period.

Notes on the Habits of Hyles (Deilephila) euphorbiae.

By H. LEONARD SICH.

On May 23rd, 1901, I received seven pupæ of foreign origin from Yorkshire. From one pupa two parasitic larvæ had emerged through round holes, one situated in the wing-case and one in the abdomen. From the remaining pupæ six imagines emerged; in one or two cases, however, the hindwings did not fully expand. Dates of emergence were as follows:—July 8th, one ♂, wings expanded and dry by 8.15 p.m.; July 12th, two ♂ ♂, both dry by 8 a.m.; July 17th, one ♂; July 18th, one ♂, dry by 10.30 p.m.; July 21st, one ♀, dry by 6 a.m. This, though a ♀, emerged from the smallest pupa. The proboscis of this pupa was dark brown, apparently owing to an injury, and the moth's tongue was imperfect. It could be coiled up, as usual, but the apical third was almost black, and this portion of the two halves would not unite.

As the moths emerged I placed them in a large case, constructed by stretching "dairy" cloth over a wooden frame. In this I placed some *Euphorbia peplus* planted in a box, and some bottles containing flowers smeared with honey, on which the moths fed freely. This case was kept in the open on dry nights, but during the day and on wet or rough nights it was placed in a shed. The imagines appeared to be strictly crepuscular in their flight, feeding on the wing or knocking themselves to pieces against the case from 6.30 p.m. till about 9.15 p.m. I frequently looked at them at 10 p.m. or 10.30 p.m., but they were then always resting, generally in a corner, and, as a rule, in a very drowsy condition. They would then even allow themselves to be touched, but clung very firmly to their resting-place, sometimes only with one or two legs, the rest drawn up close to the body. They probably flew again at dawn, but, on several occasions, I noticed that some of them were in the same situation and position on the following morning as they had been in when I left them the night before. Some even, on occasions, were disinclined to fly during the evening, merely crawling away when disturbed by the flight of another. It was a very pleasing sight to watch the males on the wing sucking the honey from the flowers. They would sometimes make use of one or two legs to steady themselves while hovering above the flowers, but usually the legs hung straight down. When the tongue was inserted in the flowers it was often bent at almost a right angle, being nearly straight for the first half of its length and then taking a sudden bend downwards to the flower. The thorax of the moth was almost always above and over the top of the flower—nearly perpendicular to it. The moths would sometimes remain at the same flower for two or three minutes. Whilst hovering, the humming of the wings was distinctly audible. If, while hovering, a moth was observed in profile with the base of the nearer pair of wings on the same level as the eye of the spectator, the underside of the wings alone was observed, as though the wings, while vibrating, passed through only 45 degrees of the circle on each side of the perpendicular. The moths knocked the scales off the back of the thorax by flying up and down the sides of the case with the dorsum pressed closely to the cloth covering, or by suddenly rising up and striking the top of the case in their efforts to escape. They also wore down the wings to mere stumps, but they could fly as long as the stumps were of equal size, and not less than an inch in length.

The female flew very little, though her wings were fully expanded. One morning I found her in close proximity to one of the males, as though they had just paired. On July 19th a male died, and a second one on the following day. Thus, when I placed the female in the case there were three males present. On August 1st the female died. I then set free one male, which was still in good condition; the other two by this time were unable to fly. The female might, perhaps, have lived longer, but owing to the defective tongue she was unable to feed.

A day or two later I discovered that the female, ignoring the spurge plant, had laid two ova side by side on the bottom of the case. One of these hatched on August 10th, and the little black larva was found crawling on the outside of the cage. It had not eaten the eggshell. The first change of skin took place on August 17th. The larva still remained dark, but exhibited some yellow lateral patches. It reminded me strongly of a very dark larva of *Celerio* (*Deilephila*) *gallii*, but the horn was larger and rougher. On August 26th it again changed its skin, and by its appearance suggested that it had skipped over the third stage and was now in its fourth. During this period the larva became much lighter in colour, and showed yellow and yellow-whitish mottlings ; it also possessed the red dorsal line. The next, and last, change took place on September 2nd. The larva then appeared in its black and red contrast, still retaining the yellow patches, the yellow and red-white marks on the sides of the segments, and the large red blotches below the spiracles. The caudal horn red for two-thirds of its length, with the last third black. The larva ceased to feed about the twelfth day from the last moult, becoming slightly duller in colour, and it began wandering round the jar in which it was placed, together with some earth and moss. It made an attempt to go down on the darkest side of the glass jar. Subsequently, the weather being cold, I placed the jar in the warm kitchen, and after two days (September 19th) I found the larva had spun up under the moss, again in the darkest place. The next day I saw that it had pupated. On October 7th, the imago, a male, was found emerged, the rapid development being, no doubt, due to the warm situation. I kept it alive on sugar and water till October 21st, when it came to grief in the sticky compound.

The only spurge I could give the young larva was *Euphorbia peplus*, on which it chiefly fed throughout the larval stage. It always preferred rather withered sprays, though I always gave it the option of eating fresh leaves. During the third and fourth stadia I gave it some *Euphorbia exigua*, which it also ate in a withered state, but after a time it went back to *E. peplus*. During the last stadium I found some *E. helioscopia*, which appeared to suit the larva's taste the least of the three species offered. I think the larva could scarcely be brought up on this species, but probably on *E. exigua*. The larva ate vigorously, but always the slightly withered leaves, though I added fresh food at least twice a day.

Notes on the Life-history of Callimorpha hera.

By A. RUSSELL, F.E.S.

On September 26th, 1901, Mr. Barnes of Reading kindly presented me with about 60 larvæ of *Callimorpha hera*, part of a brood which had hatched out from ova deposited by a female taken at Dawlish on the 13th of that month. When I received the larvæ they were about one-sixth of an inch in length, greenish-yellow in colour, and slightly hairy. I kept the larvæ in a cool room in small glass bottles covered with muslin and fed them upon lettuce leaves. Within about a fortnight of their coming into my possession the larvæ moulted for the first time, altering very little in appearance. Towards the end of October they underwent a second moult, disclosing, at this stage, a dorsal band of bronze. Their favourite spot for moulting was almost invariably on the muslin at the top of the bottle, though one or two of them, when moulting, affixed themselves to the side of the bottle for that purpose. The larvæ, so far as I could judge, underwent a third moult about the middle of November, a few of them succumbing to the operation. From this date until Christmas the larvæ, with the exception of a few which appeared to be hybernating, fed sparingly upon the lettuce leaves with which they were supplied. Many of the larvæ having died during the period last mentioned, and several of the survivors presenting an unhealthy appearance, I deemed it advisable to make some changes; I accordingly removed the larvæ to a warmer room and fed them upon dandelion leaves instead of lettuce leaves. The changes proved highly beneficial and the death rate was immediately reduced. Under the new conditions, the larvæ, now unfortunately reduced to 80 in number, commenced to grow rapidly, and by January 26th, 1902, the majority of them measured five-twelfths of an inch and four of the others fully half an inch in length, one larva having remained very small in size. The appearance at this stage, just prior to the fourth moult, was as follows:—Form cylindrical, ground colour brownish-black, dorsal band orange-yellow; running parallel with the dorsal band, and upon each side of it, were two rings on each segment situated one behind the other, each ring being formed by a thin white line. These rings were in close proximity to each other, in such a way as to form a pair, the one in front being smaller than the one behind, and, from the rings, hairs protruded. On the sides were similar single rings and two white spots or marks on each segment. By February 9th the larvæ had completed their fourth moult, diamond-shaped yellowish tufts or warts appearing in the spaces formed by the rings described above. Two or three of the larvæ had by this time grown to three-quarters of an inch and one to nearly one inch in length.

On February 16th I thought it desirable to give the larvæ more space, and accordingly removed them to larger glass bottles, having gauze instead of muslin coverings. The removal was a delicate task as it was difficult to tell whether some of the larvæ were merely resting or were fixed up for a further moult. The only way to test this was to try the effect of a camel hair brush upon them; if upon being touched they immediately rolled into a ring and fell to the bottom of the bottle there was, of course, no risk attached to their removal, but if, on the other hand, they obstinately refused to move, great caution became necessary and the larvæ had to be carefully watched to see if they moved about later of their own accord.

The later moults appeared to take a comparatively long time, *viz.*, from eight to ten days. I fortunately had an opportunity of watching one of the larvæ complete what I judged to be its fifth moult, which took place on February 16th. The operation of shedding the old skin, which took fully five minutes, appeared to be an extremely troublesome one to the larva. After having successfully got rid of its old skin it remained for eighteen minutes with its anal segments elevated; it then commenced to move about but very soon affixed itself to the gauze at the top of the bottle, where it remained stationary for a considerable time. The following is a description of this larva taken shortly after the moult:—Generally it presented a very handsome appearance, the ground colour being velvety-black, or nearly black, the head and legs shining black, the belly and claspers mouse colour; the dorsal band became brilliant orange and the tufts or roots, which, in the previous moult, had filled the spaces formed by the rings, bright yellow. The single tufts or warts on the sides appeared to be three in number and to slant backwards from a point between the two tufts on the dorsal line. On the sides, also, were the two white spots already mentioned; the spiracles were black. A few hours after the completion of this moult the orange dorsal band and yellowish tufts became less brilliant in tone, the ground colour of the body less velvety, the body itself harder in texture.

When placed where the rays of the sun could reach them the larvæ, otherwise of a sluggish disposition, became quite lively and fed a trifle voraciously, but my subsequent observations led me to conclude that the larvæ were undoubtedly night feeders. The dates upon which the larvæ were afterwards inspected by me and the notes made at such times are given below :—

February 23rd.—The larva which had remained small in comparison with the others, as well as another larva, were found to be dead, thus reducing the number of survivors to 28. The larvæ remained very sluggish, but if roused would, like the larvæ of *Arctia caia,* roll into a ring and shortly afterwards crawl away at a rapid rate.

March 2nd.—Removed the larvæ, the majority of which were now 1¼ inches in length, from the bottle they were in and placed them upon a growing plant of dandelion enclosed in a good sized gauze-covered cage standing in an airy room at the top of the house. The bottom of the box up to the level of the flower-pot was filled with cocoanut fibre and on top of this moss was placed. I now had a better opportunity of seeing the larvæ feed which they generally did at night-time. Upon examining them by candle-light I found some of them moving freely about whilst others were feeding. When aware of the light those that were moving about ceased to do so, and some of those that were feeding stopped feeding.

March 9th.—Two more larvæ died within the preceding seven days. April 5th, three further deaths, leaving 21 larvæ, and the survivors continued to remain dormant during the greater part of the day, resting either on the gauze or framework but always well towards the top of the cage. At night-time they would descend to their food-plant, and, when it became quite dark, commence to feed. I noticed that they had a marked preference for the unopened flower-buds of the dandelion, into which they would bore for their food. The larvæ by this date had grown to 1½ inches in length, but had not altered materially in appearance.

April 20th.—Found that three more of the larvæ had died since last inspection. I judged that by this time the larvæ were practically full-fed, and I, therefore, placed upon the moss a good supply of dead oak and chestnut leaves, Mr. Montgomery having informed me that the larvæ required dead leaves in which to spin up.

April 27th.—I could find seventeen only of the larvæ on this date, and concluded that the remaining one had gone down for pupation. I did not ascertain that it had actually done so for the reason that the larvæ seemed to be of such a delicate disposition that interference with them at any critical period generally meant disaster. Judged by subsequent events I believe the larva referred to had died.

May 4th.—Found seventeen larvæ still feeding. Noticed upon examining them one night during the week that as many as four were feeding on the same flower-head of dandelion, roughly speaking one from each quarter of the compass ; their heads being close to one another. So slowly did they appear to be feeding that I could not observe, while watching them, any material diminution of the flower-head upon which they were feeding.

May 7th.—Another larva had disappeared by this date, the remaining sixteen having the appearance of being fully grown, some of them measuring 1⅝ inches in length. May 23rd.—Fourteen larvæ still up. May 30th, eight larvæ only to be seen. June 3rd.—All but one larva had gone down. June 5th.—Remaining larva had disappeared.

The following is a note made at the time of a full-fed larva:—Length 1⅝ inches, form cylindrical, head and legs shining black, colour of body dull black, broad dorsal band orange, relieved on second segment by some indistinct warts; on third, fourth, and anal segment by a single yellowish tuft or wart on either side of dorsal band, and on the remaining segments by a pair of yellowish tufts or warts on either side of the dorsal band. On the sides were single tufts or warts similar to those on the back and two white spots or marks on each segment; spiracles black, belly and claspers mouse-colour tinged with violet. At the end of June 1st, I searched for the resulting pupæ and found that thirteen of the larvæ had apparently successfully pupated; the remaining four of the seventeen, which I thought had pupated, were found to be dead, two of them having died in an attempt to change to pupæ. In every case but one the larvæ had sought to pupate either in the aperture caused by the folding of a leaf or between two leaves. The larva which had taken exception to this course had endeavoured to spin up in the moss but had not been successful in doing so. There was little attempt at a cocoon; the larva contenting itself with spinning a flimsy transparent web through which the pupa could be distinctly seen. The dimensions of the pupa were about those of *Mamestra brassicae*, which they generally resembled excepting in colour, which, in the case of *C. hera*, was a of bright reddish-brown. Attached to the anal end of the pupa was the cast-off skin of the larva. Of the thirteen apparently living pupæ only ten produced perfect insects, all of the typical scarlet form. These emerged from their cocoons on the following days in July:—13th, three; 14th, two; 15th, one; 16th, two; 18th, one; 24th, one. Eight of the insects emerged the first thing in the morning, or at all events before 7 o'clock; one emerged at 11 a.m. and one at noon. After emerging, the insect remained quiet for more than an hour drying its wings, then it becomes very restless and active. In comparison with a caught specimen, which was given to me in 1898, four of the insects were smaller, five of them nearly approached the size of the caught specimen, and one was fully as large.

Generally I do not regard my attempt to rear *C. hera* larvæ as satisfactory. I only succeeded in obtaining ten perfect insects from about 60 larvæ, and of these ten one-half only approached the size of the caught specimen. Possibly I might have done better if I had submitted the larvæ to outdoor instead of indoor treatment, especially in their later stage, but I was deterred from doing this owing to the plague of ants which infested my garden last summer.

I am afraid that my descriptions of the larvæ are by no means so complete as they should be, and it is quite possible that some inaccuracies may have crept into them. I must, however, crave indulgence on the ground that I could only examine the larvæ at stated times, and my experience was that, however stationary a larva was prior to being examined, immediately the lens was fixed upon it it would become restless and commence to crawl about, which renders an accurate description of it very difficult. Again, in the matter of moults, I believe there was a sixth moult which I must have missed, but really after the earlier moults the larvæ, first one and then another of them, seemed to be in a constant state of moult, and it was difficult to follow any particular individual. Undoubtedly I should have been in a position to have observed these points more accurately if I had confined my attention to a small instead of a large number of larvæ.

Contributions to the Fauna of Spain: Bejar, Avila, etc.

By T. A. CHAPMAN, M.D., F.Z.S., F.E.S.

(*Concluded from* p. 39.)

One of the interesting butterflies met with was a very fine form of *Plebeius* (*Lycaena*) *argus*, L. (the old *aegon* of our British lists). It was very abundant in one small piece of ground southeast of Bejar, about July 9th, but was hardly seen elsewhere. As with several other species taken at Bejar, it varies from the usual form chiefly by its large size, measuring 36mm. in expanse, very decidedly exceeding any other variety I have seen or heard of. Like the ordinary from it varies within somewhat wide limits. It is usually dark violet, with a well-marked black border, and the veins dark and widening to the border. The hindwing has frequently a well-marked series of black spots, connected with, or separate from, the very narrow black border, and with a strong tendency to a white band. Just within this border the underside is almost white, with the usual markings very distinct, but rarely with any metallic colouring in the marginal eyes. The ♀ is also large, colour from nearly black to a very brown tint. Fringe rarely all white, more usually only so at apices of all wings, and may be fuscous nearly throughout. The orange marks may be almost wanting on forewings, or may be well-marked to apex. On some, the orange bands on hindwings are completed to a circle by a white or blue line, apparently corresponding with the white band on ♂. The underside is much paler than that of the type, the paler marginal colour usually forms a white marginal line just outside marginal ocelli, and usually a white band just internal to them. Metallic nuclei are more frequent in ♀ than in ♂. Lycænids were certainly rare, *Polyommatus astrarche* was everywhere, sometimes in some numbers; *Nomiades melanops*, rather a large and variable form was often met with; *Lampides boetica* turned up frequently iu odd specimens. *Polyommatus icarus*, *Cupido minima*, and *Nomiades semiargus* were also seen, but rarely, and *Plebeius argus* (*aegon*), in the fine form already mentioned, was abundant in one locality, but with this exception blues were seldom seen. There were no *Polyommatus corydon*, *P. hylas*, *P. escheri*, *P. damon*, *P. admetus*, or *P. bellargus*—the want of limestone was probably a large factor in the defect of this exhilarating little group of butterflies. Whenever there was oak scrub, *Thecla spini* and *T. ilicis* occurred occasionally in some numbers, *T. spini* being apparently the more abundant. Except *Chrysophanus phlaeas* and *C. dorilis*, *C. gordius* was the only copper captured, these were frequent, fine large fellows, up to 45mm. *Syrichthus sao*, a very large form, 29mm. (22mm.-26mm. being normal) in expanse, colour beneath a little less brilliant than usual, but otherwise fairly typical. *Argynnis lathonia* was fairly common; and *A. aglaia* and *A. niobe* var. *eris* frequent, the latter species was of very ordinary size and appearance, unlike the small form taken last year at Puerto de la Losillo. *Coenonympha iphioides* occurred in several damp rushy spots, but only once at all freely, and then want of sunshine, except for a few minutes, prevented the insect from flying, so that few were taken. Its habits, in frequenting damp rushy places, and its appearance persuade me that it really belongs to the *typhon* group, and is not close to either *iphis* or *arcania*, though *iphis* is, I suppose, nearer to *typhon* than either is to *arcania*. *Melitaea athalia* was often common in forms not apparently of special interest. The common *Melanargia* var. *lachesis*, was always in evidence, and I find I have brought home only one specimen of *M. japygia*, of which I saw others, but it was certainly not common. *Satyrus alcyone* was beginning to come out as we left, and one specimen only of *S. circe* was seen and taken at Piedrahita. It is clear, therefore, that these species were nearly a month later in emerging than we found them the previous year at Cuenca, and more, I think, owing to the lateness of the season than to any difference in the localities themselves.

I should now like to be able to give a clearer account of an observation that puzzles me a little in regard to the *Colias* occurring at Bejar. *C. edusa* was constantly seen, and my impression was that *C. hyale* was even more frequent; as a rule I never captured either species, but once or twice when nothing else was forward, it occurred to me that a specimen of *C. hyale* ought to appear in my bag as a memorandum. On each occasion when I did so what I took was a specimen of *C.* var. *helice*. It did not occur to me at the time to follow this up by a number of captures, so that all I can now say is that I brought home three *C.* var. *helice* and no *C. hyale*. I feel certain I saw *C. hyale*, and even turned several bad specimens out of my net. All that my specimens warrant me in saying is that *C.* var. *helice* is certainly common there.

The *Catocala nymphaea* may deserve another word or two. The specimens brought home are for the most part of tolerably uniform size, colour, and markings, varying little from 51mm.-53mm. in expanse. There are three dwarf specimens, 41mm., 44mm., and 48mm. respectively. Along with them are four specimens, 40mm., 39mm., 39mm., and 38mm. in expanse, which, in the field, I took to be also dwarf specimens. These prove, however, to be *Catocala nymphagoga*. It is curious I should take these two species together, in view of the remark of M. Godart (1824) that these two species always occur together. He unites them as one species under the name of *nymphaea*, but the figure he gives is an excellent one of *nymphagoga*. Hampson unites (*Insects of India*) this species with an Indian form, which has a considerably different facies, and since he says (no doubt describing the Indian form) that it has no fan to middle tibiæ, there can be little doubt that the Indian species is distinct. *C. nymphaea* has very well-developed fans, of a tint varying from nearly black centrally to white at the apices of the hairs. *C. nymphagoga* has less copious fans, of a pale fulvous colour.

Callimorpha jacobaeae was frequently seen both as larva and imago, the latter differing, apparently, in no way from British examples, but the larvæ uniformly like those seen last year at Tragacete, with the black ring broken up into sections.

The common lavender at Bejar was one of which I do not know the name. It is so like *Lavandula staechas* that I took it for that species, and it may be a variety of it. A good many insects are apparently attached to it. We found several species of larvæ on it, but failed to rear any. A very interesting one of these was a little *Nola*, easily obtained in quantity by sweeping. Its colour was a purplish-brown, exactly matching the flower-heads of the lavender, and the food of the larva was the purple leaflets with which the flower-heads are crowned. These might have been easily reared had one been able to give them a little attention, and an adequately spacious cage; several pupated, but unhealthily. The species may be *Nola thymula*, or it may be something else.

Larvæ of *Lasiocampa quercûs* were met with in various places. I fear I did not pay much attention to them, and several I tried to keep in tins finally died miserably. I fancy there is a low ground form and a Sierra one. The last must necessarily, I imagine, be *L.* var. *viburni*. It was sometimes abundant on *Cytisus purgans*, at 6000 feet and upwards. The sizes varied greatly, and I have little doubt the life-cycle of this form is the same as that of our *L.* var. *callunae*. I was able to bring home two sound cocoons, from which I have hopes that Mr. Bacot will next spring secure imagines. Once an imago was seen on the wing (Sierra, July 14th). I sent a Lasiocampid larva to Mr. Bacot, as it was something quite outside my ken. Mr. Bacot is of opinion that this is *Pachygastria eversmanni*. If this is so it is very interesting, though not perhaps surprising, as there are now a good many species known to occur in Spain whose better recognised habitat is somewhere in Asia. Half-grown larvæ of *Macrothylacia rubi* were seen on July 15th.

Near Bejar we met with that curious neuropterous insect, *Nemoptera bipennis* (*lusitanica*). It was by no means uncommon in one small region, near a little stream running at the bottom of a rather deep valley with steep sides. It occurred down near the stream, but also, and quite as freely, in the dry upper regions above the valley, where the chief vegetation was the *Lavandula*, resembling *stoechas*. I was unable to find it in some places, but failed entirely to satisfy myself as to whether it preferred damp or dry ground, flat or precipitous. It only flew, apparently, towards evening, when it would make a sort of slow hopping or jumping flight, rising and falling as if leaping over the vegetation and frequently settling. At times, however, it went straight ahead in a businesslike way, and, especially, was easily able to show a clean pair of heels if alarmed, sometimes vanishing so rapidly as to be almost mysterious; its flimsy, ephemeral aspect, however, and the failing light no doubt assisted it in these disappearances.

The larvæ of *Arctia latreillei* were quite common; some went into pupa, and one specimen was reared (forced) February 14th, 1903. The larva is well figured by Millière. *Nomiades melanops* was frequent in several places, and odd specimens occurred at many different spots during the first half of June. Most of them were a little worn, but, even so, this seems a very late date to compare with April in the south of France. The lateness of the season may have exaggerated the discrepancy, but the main cause is probably to be found in the elevation of the region. Certainly it was the first (and only) brood. Our date for *Heterogynis paradoxa* compares similarly with those recorded for it in the Sierra Nevada and those of *H. penella* in southern France. The *N. melanops* were rather variable in the extent of the dark border to the wings, and were of large size, but did not exceed large specimens from Cannes. Mr. Prout has the geometers taken during the excursion, and I have sent examples of the micros to Mr. Durrant. Mr. McLachlan has given an annotated list of the dragonflies in *Ent. Mo. Mag.*, 1903, p. 7.

As a note to our 1901 excursion, I may record that I sent young larvæ of *Hyles nicaea* from Tragacete to Mr. Bacot, and in the spring of 1902 bred *O. zoraida* from larvæ taken at Albarracin.

The butterflies taken or seen are as follows:—*Papilio machaon*, *Thais medesicaste* (?), *Aporia crataegi*, *Pieris brassicae*, *P. rapae*, *P. napi*, *Pontia daplidice*, *Leptidia sinapis*, *Colias hyale*, *C. edusa*, *Libythea celtis*, *Pyrameis atalanta*, *Aglais urticae*, *Polygonia c-album*, *Melitaea aurinia*, *M. phoebe*, *M. didyma*, *M. athalia*, *Brenthis euphrosyne*, *Issoria lathonia*, *Argynnis aglaia*, *A.* var. *eris*, *Dryas paphia*, *D. pandora*, *Melanargia lachesis*, *M. japygia*, *Erebia stygne*, *Satyrus circe*, *S. alcyone*, *S. semele*, *Pararge megaera*, *P. maera*, *Epinephele jurtina*, *E. lycaon*, *E. tithonus*, *E. ida*, *E. pasiphae*, *Coenonympha iphioides*, *C. arcania*, *C. dorus*, *C. pamphilus*, *Thecla spini*, *T. ilicis*, *Chrysophanus gordius*; *C. phlaeas*, *C. dorilis*, *Lampides boeticus*, *Plebeius argus*, *Polyommatus astrarche*, *P. icarus*, *P. corydon*, *Cupido minimus*, *Nomiades semiargus*, *N. melanops*, *Cyclopides morpheus*, *Adopaea thaumas*, *A. actaeon*, *Augiades sylvanus*, *Carcharodus althaeae*, *Hesperia sao*, *H. alveus*.

Some Genera of the Eumorphid Sphinges.

By J. W. TUTT, F.E.S.

In the last number (*anteà* p. 42) I gave reasons for describing certain Sphingid genera that I had used in *British Lepidoptera*, vol. iii. For the same reasons I am publishing the diagnoses of certain Eumorphid genera, which I have already used in vol. iv, now going through the press.

The Phryxids comprise those Eumorphids which have hitherto been lumped together under the name *Deilephila* (a name that has lapsed for reasons given (*op. cit.*, vol. iii., p. 355). The groupings here given are those suggested by Mr. Kaye (*in litt.*), whose views I have largely followed in my work. I may state that so far as the genera belonging to this tribe are concerned we find, as a rule, in each genus, a central species of wide distribution, around which, or from which, a few highly-specialised local sedentary species appear to have sprung. We thus have *Hyles* or "the *euphorbiae*-group," *Celerio* or "the *gallii*-group," &c. So far as the material in the British Museum and his own collection goes, Kaye has been able (*in litt.*) to formulate the following groupings in the tribe, based entirely on imaginal characters:

1. Head large, prominent, projecting; forewings long, pointed, with an oblique streak running from apex to close to base; nervures clearly marked by light scales; abdomen very tapering; front tibia with very strong spines and some weaker ones —PHRYXUS (*livornica*, *lineata*).

2, Head not prominent, nor markedly projecting; forewings not so long as in 1, and less pointed; forewings with oblique band from apex to near base, giving off two or more short teeth or branches; spines on front tibia nearly all of uniform medium size—CELERIO (*gallii*, *chamaenerii*, *euphorbiarum*, *zygophylli*, ? *opheltes*).

3. Head closely set on shoulders, neither conspicuously large nor projecting; forewings with a more or less well-defined fascia, very broad at inner margin, with a dark discoidal blotch that nearly always lies within the fascia; spines on front tibia weak—HYLES (*euphorbiae*, *centralasiae*, *dahlii*, *mauretanica*, *tithymali*, *annei*, *robertsi*, *nicaea*, *costata*, *calverleyi*).

4. Head and tibial spines as in 3; forewings with an oblique conspicuous line dividing the wing into a lighter and a darker portion; fascia spreading over almost the whole of costal half of wing area; discoidal spot distinct, black, sometimes an indication of a dark blotch—TURNERIA, n.g. (*hippophaes* (type of genus), *biguttata*, *bienerti*).

5. Head very broad, but not very projecting; forewings rather short, less pointed than in preceding sections, almost devoid of markings; a dark line sometimes present, extending from near apex to beyond middle of inner margin and much curved at nervure 2; spurs on front tibia in four longitudinal rows and of almost uniform size—THAUMAS (*vespertilio*).

6. Antennæ very long and very stout in ♂; forewings very dark; hindwings deep orange, with dark border reaching to margin—HAWAIINA, n.g. (*calida* [type of genus], *wilsoni*).

Turneria is named after my friend Mr. H. J. Turner, to whom I am greatly indebted for much generous help in my entomological work. *Hawaiina* is named from the locality whence comes *calida*. I have not considered it necessary here to discuss possible modifications due to Weismann's study of the larvæ, and which are fully dealt with in my book, the sole reason for the publication of this paper being to legalise the names of the new genera described.

Among the Eumorphids (*sens. strict.*) are some other genera, which must be treated similarly. Two of these may be described as follows:—

1. Head broad, palpi very rounded; antennæ fairly long extending in the ♂ to half the length of costa; forewing with costa curved at base for a short distance and continued straight to about nervure 7, then strongly curved to apex, which is much pointed (and rather produced in ♀); outer margin to nervure 5 nearly straight, and strongly indented thence to tornus, below nervure 3 falling away considerably; inner margin very strongly curved inwards from tornus for half the length, then outwards to base; hindwing with the costa greatly curved, the apex sharp (especially in ♀); from apex to nervure 4 nearly straight, then much curved to anal angle, which is very sharp and acute; nervures 3, 4 from lower angle, 5 equidistant from 4 and 6; discoidal cell very short; 6, 7 from upper angle; nervure 8 sharply upcurved soon after leaving base, and approximating very closely to 7 well beyond cell; abdomen of ♀ with well-developed lateral tufts from the 4th to last segment—*Clarina*, n.g., *syriaca* (type of genus).

2. Head rather broad, but not projecting; palpi fairly pointed; legs long and rather slender, with well-developed spines on all the tibiæ; forewing with costa straight to well beyond origin of nervure 7, then greatly curved to apex; hind margin slightly excised to nervure 6, then slightly curved to termen; inner margin considerably upcurved for a short distance, but not to half the length of wing; nervure 5 slightly nearer 4 than 6; nervures 7, 8 stalked, the interspace very great immediately before margin; upper discocellular straight, lower greatly curved inwards; nervure 3 from well before end of cell, 2 from middle of cell; hindwing with costa flatly curved to near apex, then strongly curved, tip of wing acute; inner margin straight to nervure 3, where it is angled, thence straight to inner angle; nervure 8 straight to origin of nervure 7, where it is rather angled, and thence straight again to just before reaching margin; nervures 6, 7 on a short stalk; discocellular forming a flattened S shape; nervure 5 equidistant from 4 and 6. Larva in early instars with a complete row of eyespots (Piepers, *Tijdschrift*, vol. xi), in adult instar with only eyespots on 1st and 2nd abdominals (Meldola, *Weismann's Studies*, &c., transl. p. 194)—*Florina*, n.g., *japonica* (type of genus).

COLEOPTERA.

APHODIUS TESSULATUS, PAYK.—To-day is the first opportunity I have had since December 21st, of visiting the part of Arthur's Seat, where, in November and December last, I took this insect freely (see p.

17), and since then we have had a spell of severe weather with very heavy snow, the hill was well covered for a fortnight, and, in addition, the weather has been exceptionally wet since the frost departed. A mild, bright, spring-like week tempted me to explore this fine hill once more, and I soon found the insect was still in its pabulum and apparently none the worse for the weather of the past two months, it was the only insect found, the droppings were, however, full of larvæ in all stages of development. I shall be much interested to see whether, having now found it throughout late autumn and winter, it persists into spring and summer, for there must be, I imagine, a succession of broods to keep an insect like this going for such a long period. The most curious fact up to the present, is its apparent indifference to frost, snow and heavy rains in such an exposed and bleak situation as the steep slopes of this isolated hill.—T. HUDSON BEARE, B.Sc., F.E.S., 10, Regent Terrace, Edinburgh. *February 14th*, 1903.

COLEOPTERA IN SCOTLAND.—Collecting during autumn and winter is not a very enticing occupation, and scanty leisure makes it almost an impossibility, the chances are against the weather being fine enough for out-door work on the few occasions I am free from my duties. On September 26th, in Dalmeny Park, by sweeping near the seashore, I obtained *Sitones puncticollis*, Steph., *Psylliodes napi*, E.H., *Halyzia* 18-*guttata*, L., *Apion onopordi*, Kirb., and *Simplocaria semistriata*, Ill.; and out of fungus *Gyrophaena gentilis*, Er., and *Oxypoda alternans*, Gr. On December 31st, again at Dalmeny, the following were found under bark, *Rhinosimus ruficollis*, L., *R. planirostris*, F., and *Dromius* 4-*maculatus*, L. As the weather remained very fine and bright, I went out to the Park again on January 2nd, and took under the bark of a felled beech, *Bolitochara obliqua*, Er., in plenty; *Homalium vile*, Er., and *Rhizophagus dispar*, Pk.; and, by sifting dead leaves, *Stenus impressus*, Germ., *Conosoma lividum*, Er., and *Tachyporus obtusus*, L. I have now taken all three species of *Rhinosimus* in this district, though only *planirostris* was supposed to occur in the Forth district.—IBID.

COLEOPTERA IN THE NEIGHBOURHOOD OF PEEBLES.—During 1902 I had not many opportunities of collecting at Peebles, most of my collecting being done whilst away from home, but the following notes may be of interest:—*Leistotrophus nebulosus*, F., running on a road, in late October; *Dianous caerulescens*, Gyll., in wet moss; *Agathidium nigripenne*, F. (June 15th), under bark of felled tree, ten specimens, this is new to the district; *Byrrhus fasciatus*, F., June 23rd, on pavement), one specimen; *Elmis parallelopipedus*, Müll. (June 14th), on stones in a small stream; *Athous niger*, L. (July 18th), on North British Railway platform—this appears to be rather a scarce insect here; *Corymbites cupreus*, F., on a road; *C. aeneus*, L. (June 10th), under stones on a hillside; *C. cupreus* var. *aeruginosus*, Germ. (June 23rd), on flowers in a garden, and *Otiorrhynchus sulcatus*, F., in July, in my house.—JAMES E. BLACK, Nethercroft, Peebles.

PSELAPHUS DRESDENSIS, HERBST, IN CUMBERLAND.—A long anticipated visit was made to Newton Regny Moss, near Penrith, by Mr. Britten and myself, on August 31st last, and we had the pleasure of adding the above rarity to the Cumberland list of coleoptera. Six specimens were found in thick moss growing on the drier parts of the ground. *P. heisei*, Herbst, also occurred sparingly. The time of the year was not the best for beetles, but, among our captures, the following, now recorded for the first time from the county, are of interest:—*Evaesthetus* *ruficapillus*, Lac., *E. laeviusculus*, Mann, *Stenus latifrons*, Er., *S. fuscipes*, Grav., *S. vafellus*, Er., *Myllaena dubia*, Grav., and *Trogophloeus corticinus*, Grav. We also made our first acquaintance with *Gyrinus minutus*, F., which was common in small pools. This species has previously only been recorded for Cumberland from Sty Head, many years ago by T. Blackburn.—FRANK H. DAY, F.E.S., 17, Thirlmere St., Carlisle. *February 19th*, 1903.

NOTES ON COLLECTING, Etc.

LEPIDOPTERA IN THE SOUTHEND DISTRICT IN 1902.—I found very little to do here until the end of May, the most interesting insects during that month being, *Nepticula floslactella*, *Elachista nigrella*, *Lithocolletis torminella* and *Eupoecilia maculosana*. *Glyphipteryx fischeriella* was common at various flowers on June 2nd, more examples of *E. maculosana* were taken, and *Euchloë cardamines* was observed ovipositing on yellow rocket. On June 4th *Phlaeodes lactana* began to emerge and *Emmelesia affinitata* and *E. decolorata* were netted; on June 5th *Ephyra omicronaria* was knocked out of alder (one example only), and *Spilonota servillana* and *Elachista taeniatella* were taken. A case, which I made out to be that of *Coleophora siccifolia*, occurred on June 8th, and *Lithocolletis lautella* was netted. I visited Thundersley Common, where there is a nice lot of buckthorns, on June 9th, and found a few *Phoxopteryx siculana*, empty eggs and larvæ of *Gonepteryx rhamni*, which fed up and commenced to emerge on July 22nd, and a fine *Nepticula argentipedella* which was boxed from a buckthorn leaf; *Nemotois metaxella* was flying at Coombe Wood, Thundersley, on June 18th, and *Hadena thalassina* came to sugar; *Xylophasia hepatica* at sugar and *Hypsipetes impluviata* was netted on June 20th; *Cymatophora or* emerged on June 24th; *Emmelesia albulata*, very worn, was netted over yellow rattle, and a larva of *Coenonympha pamphilus* was swept near Benfleet; *Narycia monilifera* emerged on June 29th. July yielded *Boarmia repandata*, on the 3rd; *Sciaphila virgaureana* from ragwort on July 5th; *Gelechia senectella* crept up on July 6th from some moss which had contained a lot of larvæ of *Scoparia mercurella*; *Nepticula anomalella* was bred on July 7th, and a very large *Dyschorista fissipuncta* on July 8th; *Anarsia spartiella*, *Ebulea verbascalis* (out of wood sage), and *Lycophotia strigula* were found on Thundersley Common on July 13th, *Ditula semifasciana* and *Eubolia plumbaria* on July 15th; *Lithocolletis alnifoliella* on July 16th (mines were common in October), and *Lita acuminatella* netted; July 19th, *Lamprotes atrella* knocked out of furze and a few *Chortodes arcuosa* netted on Thundersley Common. A moth, half of which had been devoured by mites, was found on July 20th, in a fold of muslin that covered a bell-glass containing bark and lichen, enough of the moth remains to shew that it was once a fine *Scardia boleti*. *Cerostoma vittella* emerged on this date. *Eupisteria obliterata* was flying over alder on July 22nd, and a few large *Œcophora kindermanniella* were bred from broom on July 26th. *Eucosmia undulata*, netted at Thundersley on July 19th, had deposited by July 27th, 96 ova, nearly all of which were on the underside of sallow leaves. *Lycophotia strigula* occurred in Southend on July 27th, a very unexpected capture; *Cleodora cytisella*, one or two on bracken; *Nephopteryx spissicella*, out of oak; *Tinea misella*, in an outhouse, on July 28th; a fine ♀ *Sciaphila sinuana* at Coombe Wood, Thundersley, July 29th; *Cryptoblabes bistriga* and *Cerostoma lucella* on July 30th, on which date several *E. ericinella* occurred flying over heath on Thundersley Common. In early August, larvæ of *Nonagria arundinis* occurred among a few rushes at Thundersley; on August 3rd, *Rhodophaea suavella* emerged, larvæ found May 18th, in a bunch of withered leaves of hawthorn at Eastwood; the hairy cases of *Coleophora albicosta* were found on furze at Thundersley, on August 4th, and a vagrant *Zephyrus quercûs* was found on potato; on August 10th, *Tortrix corylana* was bred from ash; *Noctua baia* came to sugar on August 15th, and *Triphaena fimbria* on August 21st; larvæ of *Dianthoecia capsincola* were found on seeds of campion, on August 26th, and at Fobbing, on September 7th, when in quest of larvæ of *Phorodesma smaragdaria* for a correspondent, I found close to the church a full-fed larva of *Mimas tiliae* which had either crawled, or fallen, from one of the churchyard elms, while on a fence close by was *Notolophus antiqua*, a very large ♀, with a mass of eggs; larvæ of *Eupisteria obliterata* were beaten from alder at Thundersley, on September 17th, pupæ of *Nonagria arundinis* were found on September 21st, and the first moth emerged on September 25th; *Paedisca sordidana* was bred from alder on September 30th, and larvæ of *Dasychira pudibunda*, *Ephyra porata* and *Drepana falcataria* were beaten at Thundersley, on October 12th. I found sugar very unproductive right through the season, and should not have made so many additions to my local list, had it not been for the bicycle, of which, as an aid to the collector, I have a high opinion.—F. G. WHITTLE, Marine Avenue, Southend. *January 30th*, 1903.

EARLY EMERGENCES.—It may interest your readers to know that I had two ♀ *Selenia lunaria* emerge on January 28th, also that, from January 31st to February 3rd, I had larvæ of *Lymantria monacha* hatch each day. Having no other food-plant available, I have put the larvæ on fir.—ERNEST A. ROGERS, Kabul House, Buckeridge Road, Teignmouth, Devon. *February 3rd*, 1903. [We presume these have been kept indoors all winter.—ED.]

EARLY APPEARANCE OF CYANIRIS ARGIOLUS.—I saw a ♂ *Cyaniris argiolus* settle on a holly bush in my garden (within a yard of me) yesterday, February 20th, 1903. This, I think, beats by some weeks the appearance of this insect in that abnormally early spring of 1893. —THOMAS PEED, M.A., Rose House, Worcester. *February 21st*, 1903.

PLUSIA MONETA IN THE LONDON DISTRICT.—In July, 1897, I captured an imago of *Plusia moneta* in my garden at Southend, Catford, and that, I believe, was the first recorded appearance of the insect in what may properly be termed the London district. Although I had been on the look out for this species ever since, it was not until last summer that I met with any success. On searching the delphiniums in my own and neighbour's gardens at the end of May and commencement of June last, I found the following larvæ and cocoons:—May 30th, ten larvæ; June 4th, two cocoons; June 18th, five cocoons; I also took a cocoon from a friend's garden at Croydon on July 6th. Of the ten larvæ, nine were small, and were found in the flower-buds of the delphiniums. Unfortunately I had no opportunity of attempting any full description of them at the time, but I did observe that they were of a dirtyish yellow ground colour, mottled with darker markings, and were generally maggoty in appearance. I was not sure at the time that they were larvæ of *P. moneta*, but hoped that they were. The odd larva was at least a moult in advance of the others, as it had changed to a ground colour of apple-green. I made some descriptive notes of the larvæ while rearing them, but find that these notes are so fully in accord with Mr. Raleigh Smallman's clear information on the subject, which appeared in the *Ent. Record* for September, 1902, that it would be mere repetition to reproduce them. I do not think, however, that any mention was made by Mr. Smallman of the colour of the head of the adult larva, which is palish yellow. I may also add that the larvæ are most easy to rear. Each larva remains at the back of a delphinium leaf until it has eaten it completely away, and then it travels to a fresh leaf and attacks that. Finally, when full-fed, it spins up upon the underside of a complete leaf. The larvæ which I had taken, with the exception of one, which somehow or other escaped from the breeding-cage, became full-fed and spun up on the following dates—June 9th, one; June 12th, one; June 15th, two; June 17th, two; June 30th, one; June 22nd, two. The dates and time of appearance of the imagines were as under:—

From cocoons taken on June 4th	2	June	27th	about	9 p.m.
From cocoons taken on June 18th	1	,,	30th	,,	9 ,,
	1	July	1st	,,	10 ,,
	1	,,	2nd	,,	10 a.m.
	1	,,	4th	,,	10 p.m.
	1	did not emerge.			
From cocoon taken at Croydon on July 6th ..	1	July	7th	about	10 p.m.
From cocoons taken on May 30th..	1	June	30th	,,	9 ,,
	1	July	1st	,,	10 ,,
	1	,,	4th	,,	10 ,,
	2	,,	6th	,,	3 ,,
	2	,,	7th	,,	8 ,,
	2	,,	8th	,,	10 ,,

All the cocoons found by me in a state of nature were bright yellow in colour, while those spun by the larvæ in my possession were either white or very pale yellow. The change in the coloration of the cocoons spun by the larvæ, may have been due to the fact that the larvæ were reared indoors.—A. Russell, F.E.S., Southend, nr. Catford.

PRACTICAL HINTS*.

Field Work from Middle of March to Middle of April.

1.—The larvæ of *Paedisca oppressana* are now to be obtained in tubes formed of silk interwoven with particles of their excrement on the terminal buds of several species of *Populus*. The shoots with attacked buds if stood in damp sand will yield imagines freely.

2.—*Steganoptycha pygmaeana* should be worked for from the end of March. The males fly round spruce firs in the sunshine after midday. The females, being very sluggish, require to be beaten from the trees, and a sharp look-out must be kept for them, as they invariably fall to the ground, and so require to be intercepted with a net in their descent. Hitherto this species has been recorded only from Cambridgeshire and Norfolk.

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* "Practical Hints for the Field Lepidopterist," Pts. I and II, each contain some 1250 practical hints similar to these. Interleaved for collector's own notes. Price 6s. each part.

3.—*Heusimene fimbriana* flies freely in the bright sunshine during March and April in oak woods. In dull weather it may be beaten from oaks, appearing to have a preference for resting in the higher parts of the trees. It is as well when collecting this moth to stand in the centre of a riding, as then one obtains a clear view of the insect against the sky. Under such a condition it is easily seen, which is not the case with a dark background.

4.—About the middle of April, larvæ of *Taleporia tubulosa* are to be found wandering over palings, tree trunks, etc., searching for suitable places to affix their cases for pupation. If these are collected and enclosed in a box, the sides of which have been roughened, they will very shortly attach themselves, and in due season produce moths.

5.—The made-up cases of *Solenobia inconspicuella* may now be gathered off lichen-covered tree trunks, fences, walls, etc.

6.—During April the larvæ of *Psychoides verhuellella* are to be found in their burrows amongst the spores on the underside of fronds of *Asplenium ruta-muraria*, *A. trichomanes*, *Scolopendrium vulgare*, and *Athyrium ceterach*.

7.—Those who are not averse to early rising may now spend some very profitable hours by searching the moss on old walls before the dew has evaporated. By so doing, the probabilities are that their energy will be rewarded by a good supply of larvæ of *Bryotropha domestica* and *B. affinis*. These larvæ are easily reared if kept in seed-pans on moist patches of their food-plant.

8.—From about the middle of April, *Lita aethiops* is to be obtained in heathy places. Like other black moths that frequent heath and moors, it is always to be found most freely on those parts where the heather has been burned to encourage young growth for the benefit of grouse.

9.—*Lita fraternella* larvæ occur during the early part of April in the drawn-together leading shoots of *Stellaria uliginosa*, *S. graminea*, and *Cerastium trivale*. Railway-banks and commons are the most likely places for them to occur. After having found one tenanted screwed-up shoot, it is best not to open others, as by so doing the larvæ will not have the chance to wriggle out and escape.

10.—*Butalis incongruella* is well out by the middle of April, and should be looked for in heathy places. It is almost useless to work for it except on absolutely calm and bright sunny days. On such occasions (unfortunately rare at this season) it flies abundantly for about two hours before noon.

11.—Larvæ of *Laverna paludicolella* may be searched for early in March, mining in the leaves of *Epilobium palustre*, *hirsutum*, and *montanum*. The best way to rear moths is to dig up the plants having mined leaves containing larvæ and plant them in flower-pots or seed-pans.

VARIATION.

Dark aberration of Syrphus balteatus, Deg.—During a week's stay at Brockenhurst, from September 27th to October 3rd last, I noticed several small dark specimens of *Syrphus balteatus*, amongst other Diptera, but, as it is such a common species, I only took two or three of the darkest I came across, all ♀s. When I came to compare them with my other specimens at home, I saw they were more distinct than

I had thought at the time, and, accordingly, exhibited them at a meeting of the Entomological Society of London, where I gathered that the form was known (Verrall, *Brit. Flies*, vol. viii., p. 391, "I have seen a curious melanic form, in which the abdominal markings were practically lost"), but that my specimens were unusually dark. Except in the abdominal markings, they do not differ appreciably from typical specimens, but, in the darkest, the whole abdomen is a shining black, above and beneath, with the following exceptions :—The 2nd segment has the basal spots faintly distinguished, and, quite separate, two narrow spots, which are broad at the side margins and taper off towards the disc ; the 3rd segment has about the middle fifth of the front margin yellow, and a small yellow spot just beneath ; the 4th segment has similar, but smaller and fainter markings, and a faint orange hind margin. The other two specimens have the yellow markings slightly more developed, though in no case, except on the 2nd segment, do they reach the side margins. In all three the marginal pubescence is normal. As Mr. Verrall mentions (*loc. cit.*) no locality, I conclude that he does not consider this a permanent variety, but only an occasional form. There is an apparent tendency in some species of Diptera towards darker coloration in the smaller specimens, and, perhaps, the cold dull summer may have had some effect on the colouring of these dark examples. Several other specimens (♂ and ♀) of *S. balteatus* taken this summer and autumn have all the black bands strongly marked, but I have not sufficient material to make a comparison with other seasons.—H. W. ANDREWS, F.E.S., 9, Victoria Road, Eltham. *January 7th*, 1903.

CURRENT NOTES.

The Officers and Council of the South London Entomological and Natural History Society, elected for the current year are as follows :—President, E. Step, F.L.S. ; Vice-Presidents, F. Noad Clark, and J. H. Carpenter, F.E.S.; Treasurer, T. W. Hall, F.E.S.; Hon. Curator, W. West ; Hon. Librarian, H. D. Sauzé; Hon. Secretaries, S. Edwards, F.L.S., and H. J. Turner, F.E.S. ; Council, R. Adkin, F.E.S., T. A. Chapman, M.D., H. T. Fremlin, F.E.S., A. Harrison, F.L.S., G. W. Kirkaldy, F.E.S., W. J. Lucas, B.A., and H. Main, B.Sc.

The Entomological Club held its last meeting in the Entomological Salon of the Holborn Restaurant on the evening of January 20th. The host was Mr. Verrall, who, with his usual lavish hospitality, had invited a large number of guests, many of whom were present. Among others, we noticed Professors R. Meldola and E. B. Poulton ; Drs. T. A. Chapman, F. Dixey ; Revs. E. A. Eaton, W. W. Fowler, F. Morice ; Colonels Bingham, Swinhoe, Yerbury ; Messrs. Adams, Adkin, Andrews, Barker, Borrer, Bouskell, Boyd, (Rowland-) Brown, Burr, Cant, Carrington, Carpenter, Champion, Chitty, Clark, Collin, Cornish, Distant, Donisthorpe, Ellis, Fenn, Frohawk, Gahan, Goss, Harrison, Jacoby, Janson, Jones, Kaye, Kemp, Kirby, Kirkaldy, Lloyd, Lucas, Main, Morley, E. B. Nevinson, B. G. Nevinson, Porritt, E. Smith, South, Step, Tutt, Turner, Tuck, Wainwright, C. O. Waterhouse, E. A. Waterhouse, Tathom. From 6.30 p.m.-9 p.m. a conversazione was held, when many friendships were renewed and fresh ones made; matters of interest to entomologists (not always entomological) were discussed till supper was announced, and an adjournment made to the liberal spread provided by the host. The toast of "The Entomological Club" was proposed by the host, and "The Host" by the Reverend Canon Fowler. Responding to the latter, Mr. Verrall said that the excitement of twelve months since had largely subsided, but he warned the Council that any feeling on the part of the more active members that they were neglected in the nominations to the governing body would soon develop fresh troubles. He himself was in favour of an annual ballot, and hoped that it would become a regular institution under the new rules. Mr. Jacoby again delighted his fellow-entomologists with his splendid violin-playing, whilst Mr. Rowland-Brown, in response to the host's appeal that the guests should themselves add to the entertainment of the evening, sang a song capitally. Altogether, a most pleasant and enjoyable evening was spent.

At the meeting of the Entomological Society of London, held on February 4th, 1903, the Rev. F. D. Morice exhibited, with drawings of the abnormal parts, a hermaphrodite of *Eucera longicornis*, Linn., showing one ♀ antenna normal, and one ♂ antenna remarkably shortened and with the joints greatly dilated. The clypeus and labrum, one half white (the ♂ character), and the other half black, as in the ♀. In the abdomen and legs the ♀ character predominated, but one half of the apical segments and genitalia seemed to be ♂. In a discussion which followed on hermaphroditism, Dr. Sharp stated that Father Wasmann had announced the discovery that, in certain dipterous parasites of the Termites, the individual commences as a male and ends as a female—a phenomenon entirely new to entomology, though paralleled in some other groups.

At the same meeting Dr. Chapman exhibited living larvæ of *Crinopteryx familiella* in their cases on *Cistus salvifolius*. The grandparents were collected just two years ago at Cannes. These laid their eggs out-of-doors at Reigate, and the larvæ fed out-of-doors during the winter, 1901-1902; they were kept indoors during æstivation and till the moths emerged last autumn. These again laid eggs out-of-doors, and the larvæ have fed in the open until now (February 5th), and are fullgrown in their penultimate instar. The species is a Mediterranean one, and could hardly be expected to do so well in England. At home, however, it affects the cooler and more shaded places, and does not occur where its foodplant is fully exposed in a southern aspect.

He also exhibited living specimens of *Orina tristis* var. *smaragdina* collected eight months ago (May 31st), at Pino, Lago Maggiore. Some have died, others been given away, escaped, etc., so that only these two (both males) remain alive. In conjunction with Mr. Champion, he also read a paper on the life-history of *Nanophyes durieui*, a small curculionid, that causes gall-like swellings on any part of *Cotyledon* (*umbilicus?*), generally close to the root of the plant. Many larvæ often occur in one gall, but from spots on the gall, each egg appears to be laid separately, so that the gall is not strictly a large gall, but a congeries of small ones fused together. The galls were common at Bejar, the beetles emerging during July and August, when also *Apion sedi* emerged from the plants. These galls ought to be looked for in Cornwall and other suitable localities.

At the same meeting, Mr. H. J. Elwes exhibited two cases of arctic butterflies. The first contained specimens from a collection formed by Mr. David Hanbury on the arctic coast of North America, in the region where the Parry expedition was lost. Of the butterflies observed, fifteen species in all, two of them had not been taken since they were first described by Curtis sixty years ago. Among them was *Colias boothii*. This species, in comparison with *Colias hecla*, Lef., is undoubtedly distinct in both sexes, but it is most remarkable that the male, in coloration and markings, appears to approximate more closely to the characters usual in the females of other members of the genus. The collection contained nothing new, but included the rare and curious *Argynnis improba*, Butler, hitherto taken only in Novaya Zemlya (*cf.* Markham's *Polar Reconnaissance*, p. 351), which Mr. Elwes believed to be nothing more than a high arctic form of *A. frigga*, Thnb.; a remarkable aberration of *A. chariclea*, Schn., in which the black netting marks were resolved into smeared black lines; *Brenthis pales*, for the first time from this region, precisely similar to the form taken on the east of the Lena river in Siberia, and *Coenonympha tiphon* closely resembling the form from Kamtschatka. The second case contained specimens collected between Jakutsk and Verkhojansk, north-eastern Siberia, at about the same latitude, 67°, as the preceding exhibit. They included many species which occur in the western Palæarctic region, such as *Aporia crataegi*, *Triphysa phryne*, *Coenonympha iphis*, *Brenthis selene*, *B. ino*, *Melitaea phoebe*, etc., and most remarkable of all, *Neptis lucilla*. *Parnassius delius*, was also present, and Mr. Elwes said that this was the first *Parnassius* he had seen from within the arctic circle, whilst *Colias viluiensis*, Mén., an insect peculiar to Siberia, showed remarkable aberrant female forms.

At the same meeting, Mr. C. O. Waterhouse gave an account of a nest of a bee, *Trigona collina*, recently received from Malacca. The whole resinous mass weighed 40lbs. A section of the nest which was exhibited showed the cavities in the resin filled with pollen. The central portion of the nest was constructed of more waxy material, and honey-combed with numerous cells containing the immature bees. The bees were still alive when the nest arrived, and among them males, as well as workers, were found. Specimens were exhibited, as were also males and a worker of the much smaller species, *Trigona ruficornis*, Smith, received at the same time from Singapore, and sent by Mr. H. N. Ridley.

We are pleased to learn that Mr. W. F. Kirby has completed the rearrangement of the collection of Orthoptera in the Natural History Museum, and that his working Catalogue of the Order, is now in the press, and will, it is hoped, be issued in the course of the present year.

In order to get the matter for *British Lepidoptera* well in hand, we should be glad of all possible observations, &c., on the Hepialids, Zeuzerids and Cossids, that our readers have already made, or are able to make. Eggs, newly-hatched larvæ, and pupæ, dropped in formalin for future reference, will be particularly useful, as will also all tabulated data relating to any stage. The exact time taken for the change of colour in the newly-laid Hepialid eggs (all species), and exact details of such change is particularly wanted. Material obtained this spring —until mid-May—should be sent to Mr. A. W. Bacot, 154, Lower Clapton Road, N.E., as we hope to be abroad during this time.

IMPORTANT NOTICE.

For the April number (and for this number only) exchanges must be sent to *Mr. H. Page, "Bertrose," Gellatly Road, Hatcham.*

Subscriptions for Vol. XV. are now over due.

NOTICE.

The **Back Volumes** (I-XIV) of *The Entomologist's Record, &c.*, can be obtained at 10s. 6d per Volume. Complete set of 14 vols. £5 7s. 6d. net. "**Special Index**" to Vols. III., IV. V., VI., VII., VIII., IX., X., XI., XII. and XIII., price 1/6 each. **Single Back Number** can be obtained at DOUBLE the published price from H. E. PAGE, F.E.S., "Bertrose," Gellatly Road, St. Catherine's Park, London, S.E.

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Articles for insertion and Exchanges should be sent to J. W. TUTT, Westcombe Hill, S.E., excep those relating to Coleoptera, which should be sent to Mr. H. DONISTHORPE, 58, Kensington Mansio South Kensington, S.W., and those relating to Orthoptera, to Mr. M. BURR, Dormans Park, Ea Grinstead.

All Exchange Magazines must in future be forwarded to J. W. Tutt, Westcombe Hill, Blackheath, S.E.

Reprints of Articles or Notes (long or short) appearing in this Magazine can be arrange for by Authors at a very low price, on application to **Mr. H. E. Page, F.E.S., "Bertrose," Gellatly Road, St. Catherine's Park, London, S.E**

EXCHANGE BASKETS.—March 14th, 1903, No. 1 basket.—Major Robertson, Messrs Fox, Lofthouse, Studd, Riding, Day, Bower, Horne, Bowles, Mera. January 19th 1903, No. 2 basket.—Messrs. Whittle, Studd, Riding, Atmore, Walker, Croker Robertson Adkin, Woodforde, Bower, Ash. [Members who wish to be missed must write to th name preceding their own on list, not to the Secretary]. The names of one or tw new candidates for admission would be welcomed and room made as opportunity offered

Duplicates.—Z. annulata, *vars.* obsoleta and bi-obsoleta, and intermediates. *Desiderata.*—Offers.—*W. S. Riding, Buckerell Lodge, near Honiton, E. Devon.*

Duplicates.—Pulveraria*, Advenaria*, Repandata (dark)*, Templi (fair), Hastat (fine), Cæsiata, Inornata and larvæ*, Chrysorrhœa*, Viminalis *var.* obscura*, Palpina* Heparata, Illustraria*, Cinxia*, Albicillata, Ambigua (fair), Ribesiaria(=Prunata), fiv Fluctuosa (fair), Actæon, Menthastri* *vars.* ochracea, carbonica, Lubricipeda* *var* radiata (all forms, including black bordered). *Desiderata.*—Iris, Holosericata, Irriguata, Constrictaria, Valerianata, Quadrifasciaria, Dodonæa, Putrescens, Caliginosa, Semibrunnea, &c.—*J. Harrison, 7, Gawber Road, Barnsley.*

Duplicates.—A. cratægi (4, poor), Polychloros* and undersides, Cardui* and undersides, Io* (4), Atalanta* (6), Aglaia, Agestis, Corydon, Galatea, Adonis, C. rubi, Argiolus Palealis (2), Prasinana*, S. ligustri (2), Porcellus (2), Moneta (2, poor), Opima* (3) Gracilis, Umbratica, Chrysorrhœa*, Salicis, Dominula*, Matura, Sobrina (poor), an others. *Desiderata.*—Vespertaria, Apiciaria, Advenaria, Fasciaria, Dolobraria, Lunaria Fuscantaria, Erosaria, Angularia, Pennaria, Pedaria, Zonaria, Hispidaria, Hirtaria, Prodromaria, Betularia and *var.* Doubledayaria, Glabraria and other Geometræ.—*H. D. Stockwell, 6, Beresford Terrace, Dover.*

Duplicates.—Ochroleuca, Semibrunnea (few), Cardui*. *Desiderata.*—Very numerous. —*James Banks, 19, Odo Road, Dover.*

Desiderata.—During the season—Ova, larvæ, pupæ, and living imagines of many species. Good exchange.—*H. W. Head, Scarborough.*

WANTED COLEOPHORÆ.—As I wish to breed and record the life-history of all the species of *Coleophora*, I should be pleased to receive any cases and living larvæ which entomologists may meet with. I will do what I can in return.—*Hy. J. Turner, 13, Drakefell Road, St. Catherine's Park, Hatcham, S.E.*

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Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m.—Hon. Sec., G. E. Shaw, 22, Baythorne Street, Bow, E.

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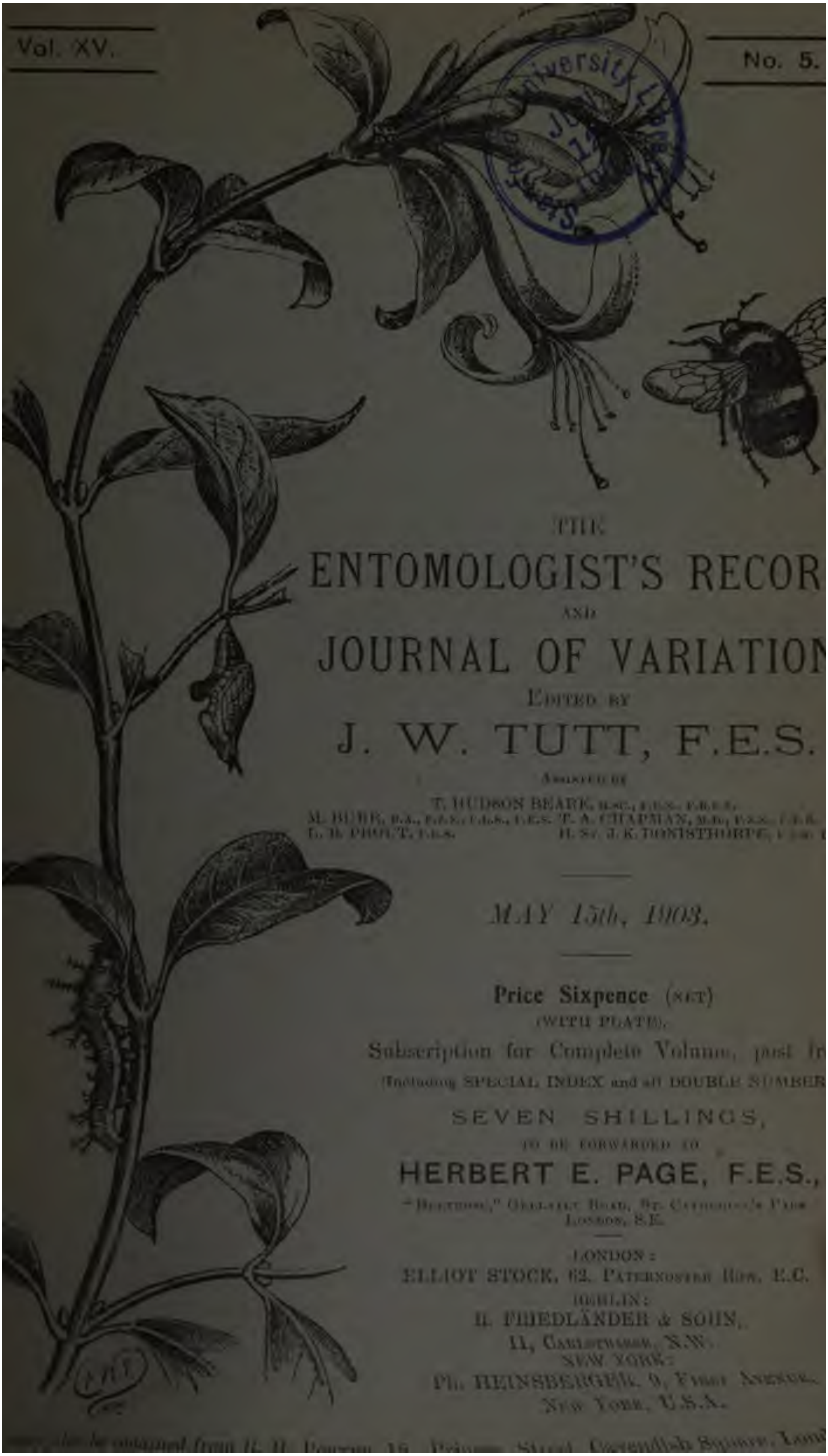

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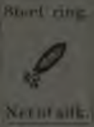
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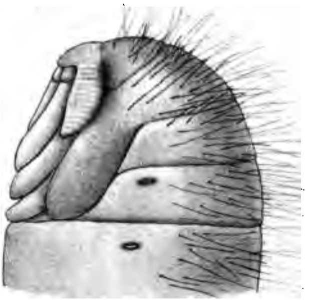

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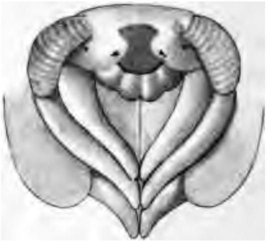

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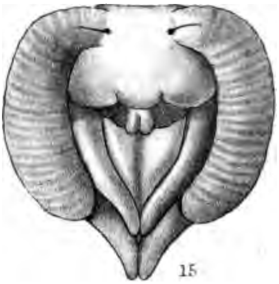

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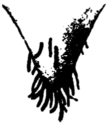

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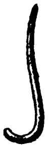

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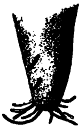

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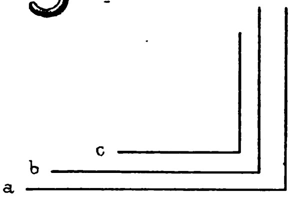

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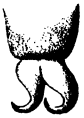

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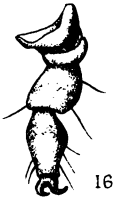

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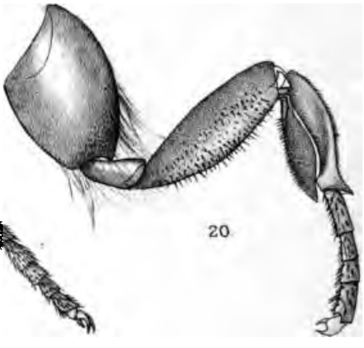

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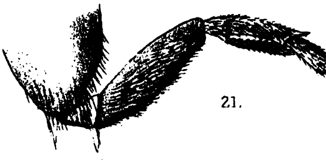

21.

E. C. Knight del.

West Newman lith.

Orgyia aurolimbata.

Entom. Record, etc. 1903.

On Orgyia aurolimbata, Gn., at Bejar (*with plates*).

By T. A. CHAPMAN, M.D., F.Z.S., F.E.S.

Last year (1901) I was fortunate enough to meet with *Orgyia dubia* var. *splendida* and to observe its remarkable habits, especially in the matter of pairing and egg-laying. (See *Ent. Record*, vol. xiv., p. 41.) This year (1902) no trace of *O. splendida* was seen, but the not very distantly related *O. aurolimbata* was fairly common in the larval state, and enabled me to make some observations on its structure and habits. These seemed to me to be of great interest by comparison with those of *O. splendida*, both in the points in which they were similar and in those in which they differed.

The larvæ were especially attached to broom, and were met with, I think, on all the species we noticed of that genus, and, occasionally, on some other plants, but more rarely, yet sufficiently often to lead me to suppose that it is attached to broom, but is also in some degree omnivorous. We met with it everywhere in the vicinity of Bejar where broom grew, and also at Piedrahita, where, however, it was less common, probably because most of them had then spun up, since it was here (July 20th) that the only imago seen was met with. About this time several of the cocoons I had, appeared to contain mature females, but the only attempt at sembling that I made was fruitless.

I gave several opportunities of pairing to bred specimens, but always without result, probably because the female cocoons I had were not at the right stage, and I only bred four or five females altogether, the difficulties of rearing larvæ when without proper facilities for so doing being very great. I have a suspicion, however, that some of these specimens did pair, and that, when the males were within the female cocoons, I was unaware of their emergence, since the males seemed more worn than their apparent dates of emergence warranted, and some of the eggs seem fertile that otherwise should not have been.

It was not till the day after my return home (*viz.*, August 1st) that I found a ♂ moth emerged that at once paired when offered a ♀ cocoon. His procedure was very different from that of the ♂ *O. splendida*. In that species, the male carefully examines all that part of the cocoon of the female that is exposed until he finally settles down, with his head at the emergence end of the cocoon; here he rests quietly for some minutes, whilst, no doubt, the female is making an opening in the cocoon. He then enters through this opening. The ♂ of the insect we are now considering made no such search, but seemed satisfied with the first portion of the female cocoon that he came to, and at once commenced actively to make an opening for himself, through which he entered. This was at about 10 a.m., he was still within the cocoon late in the evening, but had emerged the following morning.

This cardinal difference of the opening in the female cocoon, being made in the case of *O. splendida* by the female, and in the case of *O. aurolimbata* by the male, is associated with several other differences of habits and some corresponding ones of structure.

The first point that one observes is that the male was seen to tear the opening in the cocoon by means of a very definite short-hooked spine at the dorsal margin of the apex of the first tibia. Having, as a fulcrum, the front of the head and antennal bases pressed against the cocoon, he tore at the cocoon with these tibial hooks, with very strenuous and active movements, slightly shifting his position occasionally so as to vary a little the direction of the tearing force. It took him about a minute and a half to effect an entrance. On examining the male of *O. splendida* it is seen to have these tibial hooks very well developed, raising at once a doubt as to the accuracy of my observations of that species, and suggesting that in it also the male effects the opening. The doubt is, of course, strengthened by the fact that I observed the process in only one instance, and that the opening being made by the female was not a matter of observation, but of inference from her structure, and from the quiescence of the male, whilst the opening was being effected. This doubt must remain till someone makes further observations. I can only say that whilst these doubts are raised by my observations on *O. aurolimbata*, they are also minimised by the fact that, in *O. aurolimbata*, the strenuous efforts of the male at his work of opening the cocoon are so abundantly obvious that one cannot suppose similar efforts could be made by *O. splendida*, whilst appearing absolutely quiescent, especially as the cocoon of *O. splendida* is a much stronger structure than that of *O. aurolimbata*. The definite position in *O. splendida* (at the emergence apex) of this entrance, as compared with the indefinite one in *O. aurolimbata*, also points to something being done from the inside.

What, then, is the use of the tibial processes in *O. splendida* if they are not required for tearing the cocoon. In forcing himself through the very small opening provided, the male of *O. splendida* certainly exerted himself most vigorously, and I was very much astonished at the way in which he disappeared, nor did I at all understand how he managed to push himself through against the resistance, that must have been considerable, due to the wings having to be tightly folded to the body. These tibial processes would obviously give him the hold of the cocoon necessary for this.

The cocoon of *O. aurolimbata* is smaller than that of *O. splendida*, more spherical, that is, the ends are much blunter and more rounded than in that species; it is also of a very decidedly flimsier structure, so much so, that one sees the contents to some extent, whereas in *O. splendida* they could only be made out by being silhouetted against the light.

It appears that, in both cases, the empty female pupa-case is objectionable, either as likely to be troublesome to the male in finding the way about during his visit, or as interfering with oviposition afterwards, it is, therefore, got rid of in both cases, but in a very different manner. In *O. splendida* the female pupal skin is of the flimsiest texture, and is broken up into small pieces, almost dust, by the female when she emerges from it. This activity of the ♀ of *O. splendida* in tearing up her pupa-case goes to confirm my opinion that she it is that tears open the end of the cocoon for the entrance of the male. It is obvious that she is very handy with her strong claws. I think I am right in pointing out that a doubt about my observations on this species is suggested by the facts observed in *O. aurolimbata*, but from an ordinary everyday aspect I may say I really have no doubt the conclusion I drew from my observation was correct. In *O. aurolimbata* the interior of the female cocoon is furnished by the larva when constructing it with a longitudinal partition, separating it into two chambers. One of these is occupied by the pupa, and when the moth emerges she leaves this chamber containing the empty pupa-case and enters the other, and so is separated by the diaphragm or partition from the empty pupa-case, which is somewhat fragile, but much more substantial than that of *O. splendida*. The partition is sufficiently yielding to make the side occupied by the pupa or moth, for the time being, the larger of the two, but not so much so as to amount to the absolute collapse of the other, though this condition is finally nearly approached by that containing the empty pupa-case.

I made no observation as to the manner in which the female moth leaves the pupal and enters the imaginal side of the cocoon. She moves about apparently with some freedom within the cocoon, but without rubbing off any of the wool with which she is plentifully clothed, and which gives her a very nice comfortable, furry, sealskin sort of aspect. This, however, comes off completely during oviposition, and leaves the moth a very wretched unclothed scrap. The eggs remain all winter in the cocoon amongst this wool.

ORGYIA AUROLIMBATA.—OVUM: The eggs of this species, laid within the cocoon, are very like those of *O. splendida*(= white porcelain appearance) and are placed quite loosely amongst the wool with which the cocoon is filled, and are rather flattened, especially on the basal side, and at the approach of winter the eggs are still quite undeveloped. They are, however, distinctly smaller than those of *O. splendida*, *viz.*, 1·37mm. wide by 1·10mm. high. They compare thus with those of *O. splendida* and *O. antiqua*;

	WIDE.	HIGH.
O. splendida.	1·7mm.	1·2mm.
O. aurolimbata.	1·37mm.	1·10mm.
O. antiqua.	0·8mm.	0·8mm.

LARVA (description made in the field): The larva of *O. aurolimbata* varies much in size (as in other Orgyias as to ♂ and ♀), up to over an inch long. *Dorsal view*—Lemon-yellow, more orange on the first four abdominal (tufted) segments, with a broad dorsal black line on 2, 3, 4, 9, 10, 11 and 12, ending in a black tuft on latter segment. Front lateral tufts on 2nd segment (prothorax) black. Eversible glands on 10 and 11 yellow. The tubercles on 5, 6, 7 and 8, which are fully tufted in the last skin, are well-haired in the penultimate one. On these four segments, tubercle i is then small, transverse, ii is much larger, pear-shaped, with the small end dorsal, the larger end outwards and the anterior margin being curved, i lies in the hollow and the broad end of ii reaches round so as to be external to it. On 9 and 10 tubercle i is a mere dot, and ii a small oval patch behind it. *Lateral view*—Tubercles iii and iv yellow, well-haired, iii the larger, iii in a much interrupted, iv in a nearly continuous, yellow line, the rest of area black, half way up to ii. Head black, tufts on 2 and 12 black, on 5, 6, 7 and 8 yellow, orange or deep brown, other hairs whitish. Legs and prolegs orange, underside orange-yellow, a posterior tuft on 13.

PUPA: The ♂ pupa has a length of 10mm.-11mm.; general outline similar to that of other Orgyias (*antiqua*, etc.). It is of a deep brown colour, but withal very transparent, dorsally more delicate, and, therefore, paler in tint. The wings and appendages are very smooth and polished, and absolutely free from hairs, etc., the ventral aspect of the abdomen is also polished and almost as hairless as the appendages, but the whole dorsum is clothed somewhat densely with long pale hairs. These look even denser than they really are by having entangled amongst them a good share of larval hairs. The thickness of the pupa is about 3·5mm., and the length of the hairs is 1·0mm. to 1·5mm. They stand up erect on the thorax, but on the abdomen slope backwards, their distribution is somewhat equal, *i.e.*, they are not collected into tufts, etc. in any way. The anal spike, penlike in shape, is 0.9mm. long, smooth and polished; towards the tip are, dorsally, half-a-dozen minute pale brown hairs or spines and terminally a score of rather longer curved hairs spread out somewhat like a fan. The mouthparts present a labrum and two mandibles (?) as thin lappets, and below these a small rounded protuberance with a central suture, the labium, and on either side of this, and rather behind than in front of it, two rather smaller processes (the maxillæ). The antennæ are very large and cover all the second legs except the tarsi; the bases of the 1st legs are largely exposed owing to the comparative minuteness of the maxillæ.

The female pupa is not very dissimilar in size and outline to the others of the genus. The length is about 14mm. to 15mm. The width at each abdominal segment is—

1st	2nd	3rd	4th	5th	8th	End of spike.
3·5mm.	4·5mm.	5·3mm.	5·3mm.	5·0mm.	2·5mm.	

The distance of these from anterior extremity is—

1·5mm.	3·0mm.	5·0mm.	6·5mm.	8·5mm.	13·0mm.	15·0mm.

It tapers regularly from the 5th abdominal segment. Ventrally, the appendages just reach so as to touch the 3rd abdominal segment, 3·5mm. from anterior extremity. The movable segments are the 5th and 6th abdominal as in all other obtect pupæ. It may be noted that the exposed ventral aspect of the 3rd and 4th abdominals, which is covered in most pupæ, is paler and more delicate than any other part of the pupa and has not yet completely trained itself to be an exposed portion of the pupa. On these and the two following segments faint cicatrices of prolegs exist. The anal spike is almost exactly the same as that of the ♂. The dorsum (1st-4th abdominal) shows the sites of the brushes by paler, depressed, and less polished areas. The whole dorsum carries pale hairs about 2mm. long, less dense than in the ♂ pupa, apparently because spread over a larger area (from size of pupa), and not from being fewer. They are erect on the forward segments, deflexed on the latter; there are some shorter ones below the spiracles. The whole surface is shining and polished, the spiracles hardly marked as slightly darker pits. The head has a central prominence, below which is the rounded labrum somewhat prominent, with a definite projection at either side (mandible ?), below this is the labium, prominent and bilobed, but very short; the maxillæ are also very short, shorter than the labium, as small triangles on either side of it; the antennæ are broad and short, reaching half-way to end of the appendages, their tips slightly overlaying the wings. There is a large triangle below the labium, presenting the basal portions of 1st leg; the 1st and 2nd legs are well exposed, the wings extend to about the end of 2nd leg, and beyond them is the tarsus of the 3rd leg. The wing has some breadth, and the hindwing is represented by a small angular portion that dips under the front wing, and, being so hidden, might be as well developed as the forewing.

Imago : The ♂ moth appears to be very close to, if not identical with, Dr. Staudinger's var. *guadarramensis*. The colour is a very black-brown, with a little ochreous shading at the base of forewing, and the cilia of forewing, not certainly golden, but dark reddish-brown ; there is faintly indicated in some specimens a darker central fascia, a darker disco-cellular shade, and a few of the nervures darkly outlined.

The ♀ of *O. aurolimbata* is about the size of that of *O. antiqua*, but is more cylindrical, *i.e.*, of about the same size for the greater part of her length, with the ends more truncated. The colour is rather yellower than that of *O. antiqua*, but she is especially covered with a thick coat of very glossy, silky, wavy hairs, that I have already referred to as making her look as if clothed in a very comfortable coat of sealskin. Unlike the ♀ of *O. splendida*, the head is free and carries very definite antennæ and labial palpi. The head is brown, 1·27mm. across and about 1·0mm. vertically. There appears to be nothing recognisable as eyes. The antennæ are short, thick, batons ·27mm. long and ·09mm. wide, thicker at the base. They consist of one piece only, but this is evidently a large number of joints anchylosed together, the first large urceolate joint and the second, similar but smaller, are, perhaps, not always quite united to the others, though the second is sometimes so firmly united to them that any line between them is difficult to distinguish, it may even be so fused to the flagellum, that the antennæ consist apparently of only the one basal joint and the flagellum. The flagellum is only one piece, but with a series of incisions that shows it to consist of from 16 to 20 joints fused together. The labial palpi are comparatively large and conspicuous, consisting each of two nearly globular joints about ·11mm. in diameter, no third joint can be found, on either side is a small angular projection, which is probably the maxilla. On one specimen is a double antenna-like projection ·3mm. long in the eye region. This seems to be one of those monstrosities to which dwindling structures are liable. The legs are about 3·0mm. long (if straightened out). The tibiæ and all the joints of the tarsus are anchylosed into one straight piece. In all cases the tibio-tarsal articulation is obvious, the end of the tibia being marked by a spine and two spurs, the line of articulation of the spurs being obvious though they appear to be anchylosed. In one or two cases this tibio-tarsal joint seems to be not completely solid, at any rate fracture and disarticulation occur easily here in some specimens. In most cases, or at any rate where the specimen is not carefully prepared as a transparent object, the tarsus seems to be all one piece. In reality it is five joints fused together, as marked sometimes by lines of union and by the distribution of the spines, which mark five marginal rows, or places where the spines are stronger. The claws are curious, and they are not very strong. Their curvature takes place almost entirely by a bend of about 90° at their middle, and half way from this to the apex they make a slight curve or bend in the opposite direction producing a peculiar and useless-looking aspect. The forewing is a rounded bag-like lappet 0·8mm. long and 0·12mm. wide, with a few hairs over its surface. The hindwing has nearly as wide an attachment (*i.e.*, 0·8mm.) to the body, but is only about 0·3mm. long, and is not always easy to find (even if it always exists). One specimen has very remarkable wings, illustrating the variability of obsolete structures. The two wings are respectively 1·3mm. and 1·5mm. by 0·3mm. wide, ending in one case with a tubular looking process at one side, on the other in an irregular spathula-like expansion. The ovipositor presents two oval plates each about 1·0mm. broad, by 0·5mm. long, which form the opening. Each of these plates is clothed with fine hairs, which also form a marginal row, and has a dark (highly chitinised) rod attached to its anterior margin towards the outer angle, and about 0·6mm. long. The next segment forms a more complete circle, but is less solid, and has two very short (·14mm.) rods towards its lateral aspect. The spiracles are slits about 0·12mm. long, with double chitinous margins along the whole of one side and one half of the other (posterior). From the end of the latter, *i.e.*, about middle of hind margin, a rod, apparently double (·14mm. in length), dips down apparently along the side of the tracheal tube.

One ♀ cocoon of *O. aurolimbata* when opened showed a cocoon of an ichneumon within it, a dense oval, ribbed cocoon of whitish silk, with longitudinal darker flutings. One compartment of the *O. aurolimbata* cocoon was quite empty and flattened, the other contained a larval-skin of *Orgyia*, a pupal-skin of *Orgyia*, a small shrivelled ♀ of *Orgyia* denuded of wool and containing eggs (perhaps a dozen), and the ichneumon cocoon, which was well coated with and entangled amongst the loose wool of the moth. The cocoon looked as if made first and mixed up in the hairs afterwards. If this be correct, then the ichneumon larva emerged from the pupa, and the moth, nevertheless, emerged afterwards. As against this, the ichneumon cocoon was loosely, if at all, attached to the cocoon of the moth, as one would expect it to be if it emerged from the pupa. In that case it must have emerged from the moth. In any case, the ichneumon and the moth both came from the same larva, and the moth, though containing few eggs and (not being fertilised) laying none, was nevertheless energetic enough to denude herself of all her clothing.

EXPLANATION OF PLATE IV.

Fig.	
1.	Head of *Orgyia aurolimbata*, ♀, ×23, showing anchylosed joints of antennæ, labial palpi, minute maxillæ, remarkable process (teratological) on one side.
2, 3, 4.	1st, 2nd, and 3rd legs of ♀ ×14, showing tibiæ and 5 tarsal joints just distinguishable, but all anchylosed into one mass.
5, 6.	Forewing and hindwing ×14.
7, 8.	Two curious malformations (teratological) of forewings of one specimen ×14. [These figures are inverted.]
9, 10.	Two specimens of last two abdominal segments (8th and 9th) flattened out, showing rods, etc., ×13. [Also inverted.]
11.	Spiracles of 1st, and three other abdominal segments, ×60.

EXPLANATION OF PLATE V.

Fig.	
12.	Lateral view of anterior end of ♀ pupa ×5.
13.	Ventral view of same ×7.
14.	Anal armature of ♀ pupa ×13.
14*a*.	Enlarged hook from same to show curvature of end.
15.	Face of ♂ pupa ×7.
16.	Anal armature of ♂ pupa ×13.
17.	*a*, *b*, *c*, Relative height and width of eggs of *Orgyia splendida*, *O. aurolimbata*, and *O. antiqua* ×20.
18.	1st leg of ♀ *O. splendida* ×24.
19.	Claw of same ×55.
20.	1st leg of ♂ *O. splendida* ×13.
21.	1st leg of ♂ ***O. aurolimbata*** ×13.

The habits of Thestor ballus, with some notes on its oviposition and egg.

By J. W. TUTT, F.E.S.

Every lepidopterist who comes to Hyères is keen on obtaining *Thestor ballus*. This little species, so abundant in north-western Africa, and so limited in its distribution in Europe, occurs quite commonly in the Hyères district, and may be obtained almost anywhere, wherever its foodplant, the somewhat local *Lotus hispidus*, grows. Its marked sexual dimorphism singles it out at once as a striking little species, the ♂ reminds one, in its coloration, rather of *Callophrys rubi*, and the ♀ of *Chrysophanus phlaeas*, though it is without the characteristic black marks on the coppery ground colour of the upperside, whilst on the underside this similarity is still more marked, for the forewings of both sexes show the small black quadrate markings that distinguish the latter species very distinctly, and the hindwings the metallic green and tiny white spots that one is accustomed to in *C. rubi*. It is true that these resemblances are only of the most general character, and that the upperside of ♂ *T. ballus* is of a duller brown, whilst, on the underside of the hindwings, a distinct marginal band of purple, not only gives a very distinct appearance to the species, but even suggests to one, until one thoroughly knows the species, that the best of specimens are somewhat worn. The small marginal coppery blotches at the anal angle of the hindwings on the upperside, also tend to suggest to one certain "hairstreak" affinities. *T. ballus* is, however, a much more heavily built insect and one is puzzled as to its affinity, for its life-history is, to the scientific worker, still almost a sealed book, and, although the species has been more than once bred by the resident collectors at Hyères, we are still in the dark as to a detailed account of the egg, the newly-hatched larva, the larva in its successive stadia, and its pupa, all of which must be utilised to make quite sure of its correct relationship with the rest of the Palæarctic fauna. Dissection of a ♀ shows well-developed minute full-coloured green eggs, almost spherical in shape, with little surface marking to be detected by the aid of a pocket lens, *i.e.*, an egg very different from those of the typical Lycænids, still, an egg laid in nature may be much more spined and marked than an egg, comparatively soft, taken from the female's body, but it is not so much the puzzling items of the affinities of *T. ballus* as its habits that have interested me during the last few days.

Arriving at Hyères on the morning of March 28th, a fine, hot, sunny day, I started out for a look round, and, having stupidly forgotten to bring any copies of the various magazines in which notes relating to the lepidoptera of the district occurred, and letters that one or two friends had sent me, I had to view the land from the standpoint of its being to me, lepidopterologically, a *terra incognita*. Nor was my chagrin lessened by the fact that I had forgotten Mr. Raine's address, and it was not until the day I left Hyères that I made the acquaintance of Mr. Powell, an entomologist who, one may safely prophesy, will do great things one day in working out the life-histories of the local butterflies. As a result, instead of going up to the renowned Costebelle quarries and spying out the land, I went off up the Toulon road for a mile or so, turned up a footpath to some cottages, followed it up into an overgrown olive garden, passing on the way a piece of hillside bare and stony at the top, but planted with vines and roses below, whilst between the rows of vines and roses, small luxuriant patches of cultivated *Lotus* flourished, thinning out into starved and ill-grown plants towards the top of the slope, whilst quite on the top of the slope *L. hispidus* occurred as a weed. Here I first found *Thestor ballus*, flying over the more barren parts, dashing with the agility of *Nisoniades tages* from one point to another, and settling low down on the plants, and, when covered with the net, falling to the ground, drawing in the legs, shamming death, or rapidly jerking along on the ground with the wings drawn close together, and making the process of boxing long and tedious, so that one soon learned that it was better to sweep them into the net, than to cover them, and, on the more luxuriant growth of cultivated *Lotus*, which they seemed to prefer to their natural pabulum, this was not at all a difficult matter. When one was startled, however, it went off for a few yards at a great pace, and then, darting quickly backwards and forwards, showed one only its underside, so that, against a green background, it was most difficult to follow with the eye, and specimens were thus often lost quite quickly. In this locality one got the idea that the insect was a mixture of a skipper and of a rapidly-flying Lycænid in its habits, and worked for it accordingly. The female, on the other hand, exhibited none of the rapid dodging movements of the male. As soon as it was disturbed its bright coppery upperside made it conspicuous, and its heavier build and generally more definite flight rendered it easy to follow, but it flew up the slopes briskly enough and sometimes wanted a lot of following up hill before it could be taken. On the whole, in this sex, one thought one had a sort of glorified *Chrysophanus phlaeas* with which to deal, but without so marked an ability to dodge about rapidly as has the latter species, and, as a result, one missed few that one really intended to capture. Down on the ground, however, the ♀ was even more difficult to deal with than the ♂, and the short spasmodic jerks in which it continuously indulged, often allowed it to escape unexpectedly under the rim of the net and to get away before one could get ready to fetch it down by a straight stroke ahead, as it commenced, as it almost always did, an ascent up the slopes. I did not observe a single ♀ in the act of oviposition either on this or the following day, although the weather appeared to be perfect. It may here be observed that, when settling, the insect drops quickly, draws up its wings, exposing only the green underside, there is at this time no flapping of the wings nor showing of the upperside thereof.

On March 30th, I went to Carqueiranne, walked up behind the church and away up the road over the hills, a tramp so often described by lepidopterists, in whom the fresh air of the Mediterranean, laden with the delicate aromas of the delightfully scented plants, has breathed anew the breath of life, health and eagerness, and raised once again the desire to live. Here, again, I met *Thestor ballus*, I will not say abundantly, for this year, I understand, has been remarkable, inasmuch as an exceedingly early spring has been followed by an almost continuous drought which is said to have delayed both vegetation and the further appearance of the spring insects. Still I found the species in considerable numbers, the ♂ flying by the side of the roadway, settling on the bushes, and luring one into the belief that they were only

Callophrys rubi after all. They darted about in the same headlong way, threw up their green undersides and became visible and invisible at will, and escaped the net so frequently that one is almost inclined to aver that they were here almost difficult to catch. This was especially the case on the little rough blackthorn-covered waste that one finds in the very earliest part of the journey, but, on the partially cleared slopes opposite, the females were busy, apparently ovipositing, though I could not find eggs, flying hither and thither, and had it not been that the men who were mining on the slope occasionally blew up masses of rock that fell about in a rather dangerous manner, one might have made a bag; but, further on, the species occurred on the rough patches between the cultivated plots, almost the only remnants now of the ground that years ago made this part of the Carqueiranne district famous in the annals of lepidopterology. Still, all the way along, one found the species here and there haunting the bushes, although, in a disused quarry, it was dodging about Lycænid-like on the herbage near the ground, and falling an easy prey. What sort of a bag one could have made I am not prepared to say, but I carried only a very small number of boxes, and these were all filled long before noon, when I gave my attention to other matters almost equally interesting.

My last attack on *Thestor ballus* was on April 2nd. A dull morning led me to the Costebelle quarries for a walk, the weather brightening but little as I went along. I turned up the little road that leads to the Mont des Oiseaux, past the famous quarries. The latter, no doubt owing to the want of sun, drew blank, but, by the roadside, an occasional example flew later in the gleams of sunshine with which alone we were favoured, and, had it not been that I knew how necessary sun is for the species, I should have said that the reputation of the quarries was not altogether deserved. However, a spell of sunshine that lasted some twenty minutes showed me that the species, having apparently temporarily deserted its usual haunts, was rather numerous on a field of peas in full blossom. Both sexes were there, flying apparently about the blossoms; but whether simply to feed or whether the peas were considered suitable for egglaying, which I very much doubt, I do not know. At any rate the *Thestor ballus* in the pea field were the last living specimens I saw in nature of this most interesting local little species.

On my visit to the Costebelle quarries I was fortunate in meeting Mr. St. Quentin, a Yorkshire lepidopterist, with considerable knowledge of the Riviera butterflies, and, in a conversation later in the afternoon, in the shop of Mr. Powell, he informed me that he had, at Costebelle, marked two plants of *Lotus hispidus*, on which, a day or two before, he had, he was sure, observed a ♀ *T. ballus* ovipositing, and, on my stating that a description of the egg was at present a great desideratum, he kindly volunteered to examine the plants, and, if successful in finding the eggs, to bring them to Hyères. Accordingly next afternoon he met me at Mr. Powell's with the plants carefully potted, and it says as much for the skill with which the female hides her eggs, as for the acumen of Mr. St. Quentin in detecting them, when I state that, although the position of the leaves on which the eggs were placed was marked by small pieces of stick, it took me some minutes to find them. Mr. Powell was good enough to lend me his microscope, and, having mounted one of the eggs temporarily, we were able to make the following description:—

Full green in colour; diameter ·7mm., height ·55mm.; circular in outline and depressed (or flattened) centrally. In a lateral view the egg is oval in outline; surface shiny, with a very strong, raised, irregular polygonal (4-, 5-, and 6-sided) reticulation, the mesh fairly large, and the sides of the polygons not very straight; at each point of the mesh is a blunt knob (possibly representing the better-developed spines of the highly-specialised eggs of some of the Lycænids), these knobs have a transparent, glassy appearance. Seen edgewise, the central area of the upper part of the egg, gives a suggestion of a slight depression, or rather flattening. From above one sees a distinct hollow—the micropylar depression—but the structure of the micropyle is not to be distinguished without proper mounting.

The eggs were laid in each case on the upperside of leaves, near the middle of the plant, that had only just commenced to unfold, and were almost buried in the long hairs with which the leaves are covered. After description they were forwarded to Mr. Tonge, who has obtained a photograph of them, and this, with other eggs, we hope to reproduce later in the year for the benefit of our readers.

The story of Acidalia contiguaria.*

By EDMUND CAPPER, M.D.

It is not because of any scientific entomological knowledge that I possess that I have agreed to read this paper before the Lancashire and Cheshire Entomological Society, but, at the same time, I do feel that I stand in the position of one who can confidently claim to have taken more specimens of *Acidalia contiguaria*, in its native wilds, in North Wales, than any other individual, and, for this reason, I venture to present this somewhat gossipy paper to you, as, owing to my never having kept a diary, my remarks on the species must naturally be somewhat rambling. In *The Entomologist*, 1878, pp. 241-242, there occur two or three paragraphs, contributed by my father, the venerable president of this Society, which, in a few brief words, summarise his experience in relation to *Acidalia contiguaria* for the four years preceding the date of publication. I may just recapitulate the history of the insect up to that time. The first specimen appears to have been taken in these Islands, in 1855, by Richard Weaver, and the capture was recorded in the *Entomologist's Annual* for 1856, under the name of *Dosithea eburnata*, though Mr. Stainton suggested at the time its correct name. In the following year another specimen was taken near Conway, and yet another near Bangor, in 1860. About the year 1862, Mr. Greening, of Warrington, secured one, or possibly a pair, and, being successful in rearing the insect, it was for some time erroneously spoken of as "Greening's Pug." It is of some interest to note that all his specimens were of a somewhat dark type, at all events considerably more so than most of the insects we have discovered in the native state, and, as far as I remember, there was a tendency in our own specimens, afterwards bred by the hundred, to gradually darken, but in this I am open to correction by my father. Greening managed to continue the breed up to the time when Mr. Capper, as mentioned in the summary referred to, turned it up again near Llanfairfechan in the summer of 1874, and, after a time, "Greening's Pug" developed into

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"Capper's Acidalia." One evening, during that summer, whilst overhauling the captures of the day, a specimen was discovered in one of the boxes. Diligent search rewarded us with a few more specimens, and the next year, while stopping at Penmænmawr, we succeeded in securing a few dozen. Up to this time, although we obtained many eggs, which were distributed among friends, no one was successful in rearing the larvæ of the re-discovered insect, and it was not until 1877 that my father and Mr. Sidebotham both attained this fortunate end. After this our summer holiday was generally spent in North Wales, either at Llanfairfechan, Penmænmawr, or Llandudno, all within easy access of the special haunts of the species, which we gradually localised with much greater accuracy. From these centres some of our number made the excursion almost daily, and, as our experience grew, we seldom returned with empty hands. In these earlier days of *contiguaria*-hunting, I regret to have to confess that we were somewhat stimulated and kept up to the mark by more than the love of collecting alone, for a reward of twopence per insect was for long our own local market price. Later on I am relieved to be able to state that I was seized with unbounded enthusiasm for the quest itself, and many were the happy days I spent upon the hills, till almost every rock became familiar, and days absolutely blank were rare indeed. Strangely enough one blank day (or a day almost blank—I cannot be absolutely certain at this distant date) did occur under singular circumstances, so amusing as to be quite worth recording. A well-known local entomologist—probably one of the best known—who has now long gone to his rest, came over by invitation for a day or two on one occasion while we were quartered at Penmænmawr. I have not the least doubt that he came fully prepared in the strength of his unquestionably great experience, to show us how *Acidalia contiguaria* could be taken by the myriad, and to demonstrate the comparative futility of our presumably amateurish methods. Most carefully we took him over the ground and most conscientiously introduced him to the scenes of our greatest successes, but all in vain, and with what reflections in regard to us he returned home must remain for ever in the land of conjecture. Possibly he imagined that we had extended tactics, proverbially only permissible in love and war, to entomology—tactics, which I regret to say, were sometimes ascribed to him; but "de mortuis nil nisi bonum"—and, at all events, he was a great naturalist—so "requiescat in pace." Our intentions were certainly honest and we were absolutely guileless, but such is sometimes the luck of the collector.

Of course when we had once the breed in full swing annual excursions became no longer necessary, and a visit to the hunting-ground was only required when the stock depreciated, or when our whole brood died out, as it sometimes did. On these occasions it generally fell to my lot to be the fortunate deputy for the importation of new specimens, and it was my experience upon these many expeditions that gives me my small title to address you on this subject this evening; for though I never went for longer than from Saturday evening to Monday morning, not on any single occasion did I fail in attaining the object in view; a success which may be achieved by any who go at the right time and who know where to look. From July 8th to the 18th is exactly the right time for the species, and I well remember on one occasion, travelling with my younger brother to Llanfairfechan and then on to Penmænmawr, along that wonderful road with the sea shimmering in the sunlight on the left and the glorious mountain towering on our right. Those of you who know the road will recollect that at one part it is actually hewn out of the solid rock. Entomologists pass not these rocks lightly and unheeding —they are deserving of your closest attention—for, in the crevices in little rocks sheltered from the wind, the little delicately pencilled insect is sitting with outstretched wings merely awaiting capture. Not that this is the best or surest spot by any manner of means; nevertheless, these rocks are the scene of some of our earliest successes, and though, for some reason, they are not as good as they used to be years ago, nevertheless a careful search will generally be rewarded with at least one specimen, and if one, in all probability two, for they are a knightly race, and where the female is you may depend the male is not very far away, in fact, a pair of beauties very frequently greets the delighted eye at one and the same moment. To us these rocks have also other interests, for one of my brothers, in blind enthusiasm, clambered one day so far up the hurtling precipice, that we despaired of ever getting him down again, and fancied that we should have to leave him, a monument for ever on the mountain-side, and a petrified warning to imprudent collectors. But more memorable are they still for the disastrous accident to my father, which occurred just above, and so unfortunately lamed him for life. These little insects are responsible for a great deal, but, after all, we must recollect that if they did bring him woe they likewise gave him a solace and joy which only the true naturalist can know. One other point about these particular rocks. In the old days when we used to stop at Penmænmawr, we used to attend the Congregational Church just about a quarter of a mile from this most interesting part of the road. What more natural than that we should extend our walk after service along this road, or that our gaze should be occasionally turned upon the noble crags that abutted upon it? And thus the quiet Sabbath had its revenge, a cruel and malicious one it seemed! For the experienced eye had a special knack on Sundays of spotting a coveted specimen just about six feet out of reach, and then there was no hope left except to disturb its sacred and holy calm by volleys of gravel or other handy ammunition. Fancy those peaceful and eminently respectable Welsh churchgoers on their homeward way, scandalised by the somewhat unwonted spectacle of four or five apparently intelligent individuals intensely absorbed in pelting the face of the frowning rock, with *débris* that seemed merely to fall back upon their immaculate Sunday toilets. And then, when at last the insect, always lethargic under anything like ordinary circumstances, was persuaded that something unusual had come to pass, it would spread its wings, and it was just about 100 to 1 that a gust of wind would come to its aid and waft it away to some most inaccessible spot. Somehow or other this always happened on Sunday. Moral: If you must admire the rocky scenery on the Sabbath, do not let your eye glide over parts out of reach, for it only leads to sorrow and tribulation and to language weird and unholy. I hinted at digressions—this is rather a long one, and to detail the circumstances of this excursion further, except to state that we settled down at the Mountain View Hotel, and that this became afterwards the centre of many excursions after *Acidalia contiguaria* in the years that followed, were outside the scope of this paper. The inn stands upon the main road to Conway, just at the point where the turning which leads directly to the Sychnant Pass branches off the old road, a little longer, but far more picturesque, which is a delightful way of old roads. Follow the Sychnant Pass road for a short distance, and then turn to the right along a charming lane and you are on the direct path to Moel Llys or Bilberry Hill. This little hill, heather-clad from base to summit, and looking like the tumulus that covers the resting-place of some sleeping Titan, is undoubtedly the home of *Acidalia contiguaria.* Odd specimens may stray away from here, and captures have been recorded, as we have seen, as far away as Bangor and Conway, but the extraordinary localisation of this species is one of the most interesting features in its history. Some years ago, during a dry summer, the heather in some way became ignited, and the fire rapidly spreading burnt for many weeks, a brilliant spectacle at night, and much of the mountain was blackened and laid bare. For several seasons after this the insect was extremely scarce, and doubtless thousands were destroyed. The lane I have mentioned leads up to a gate, passing through which you find yourself on the mountain-side. Still continue your course along the green marshy sward ahead for about 400 yards, then turn sharp to the left, taking a diagonal direction towards the summit. Small patches of rock now break out from the luxuriant growth of the mountain-side at irregular intervals. Search these well, for here you will find *Acidalia contiguaria.* And what more natural? The rocks grey and covered with lichen nestle among the heather, which thickly surrounds them, and overhangs them above in glorious clumps. The insect is very lethargic in its habits. The heather is the food of the larvæ in their native state. Without doubt the perfect insect, emerging from the chrysalis, languidly flutters down from the overgrowth, and settles, both males and females, upon the first convenient flat surface of rock, and there its destiny is fulfilled. As they sit they need little persuasion to coax them into your pill-box, and they very seldom give any sign of activity unless the breeze be fresh, in which case they may very easily be caught up and wafted away. Only be very careful lest they fall into the thick tangle at the foot of the rocks, for then the difficulty in tracing them among the tough and matted stalks may prove insuperable. You are now on the enchanted ground. All down the northerly side of the mountain the thick clusters of heather brush the middle of the thigh and the bilberries grow in the wildest profusion, the fresh breeze blows in from the sea, the magnificent panorama of the Conway Valley stretches out before you, the brilliant greens and purples of the mountains around fade imperceptibly away into the misty blueness of the distance, the shimmering heat waves dance in the dazzling sunlight, the azure canopy above, flecked with fleecy clouds, completes the ravishing picture; and as for you, if you still retain a vestige of your youth, and that is quite possible far into the eighties (if you are an entomologist) you fairly shout aloud for the very joy of living. As you pass down the mountain-side the rocks are found in larger and bolder groups, until at last they rise in huge and towering crags. These are worth searching, but too much time should not be expended upon them if your sole object in life is *A. contiguaria.* Down below, just before you pass again on to the Sychnant Pass road, there is a group which is practically never failing. I have laid emphasis upon the fact that the insect is local; here then is the very nucleus of its habitation. At this spot one or two insects are a certainty, or as much a certainty as may ever be counted on by a collector. If you doubt me, come with me next July, and I will take it upon myself to guarantee that you will not return empty-handed.

I have confined my remarks up to the present to *A. contiguaria*, but now, just a word upon some other insects which are found upon these famous crags. Upon approaching the rocks, disturbed by the sound, numerous insects are seen to start up and disappear. If you take the trouble to track them down they will usually be found to be either *Larentia caesiata* or *L. didymata*, both of which species, especially the latter, are constantly present. Next in order of profusion, but always quietly settled, comes *Eupithecia nanata*, generally lovely specimens, evidently but recently from the chrysalis, whilst *Eupithecia pulchellata*, *Halia wavaria*, *Acidalia scutulata*, and even *Larentia pectinitaria*, in spite of its size, are interesting to mention, since all of these were constantly pointed out to us in wildest excitement by the many friends, male and female, whom we turned into keen collectors, at least for a limited interval. Their lack of discrimination can, of course, be easily understood—one species probably looked much the same as another; but what are to say ot one member of our own family, who in kindness shall be nameless, and, who, being left upon the spot at the appointed time, dreamed away a few delicious days upon the hills, forwarding from thence glowing accounts of his captures to his delighted parent at home, and returned triumphant with a score or two of splendid specimens, most of which, however, by some remarkable process, metamorphosed themselves upon the journey into *Eupithecia nanata*. *Anaitis plagiata* is not uncommon, darting from the rocks in characteristic flight; a number of species such as *Acidalia bisetata* and *Boarmia gemmaria* (*rhomboidaria*) became familiar even to our uneducated eye; while as for *Scoparia ambigualis*, it became known to us, in our not very scientific language, as "the beast." Perhaps the reason for this was that we had to be very careful to distinguish it from a much rarer Pyralid, namely, *Scoparia mercurella*, one or two specimens of which we were fortunate enough to secure. Mention must certainly also be made of *Eupithecia constrictata*, which occurs somewhat freely, but they were generally in rather battered condition, as I suppose the season was for them rather late. One other little friend, whose acquaintance I remember I first made at Silverdale, must not be altogether overlooked, namely, *Nudaria mundana*, with its tricky little way of tumbling down into the undergrowth on the slightest provocation. In addition to the above we not infrequently disturbed a sleepy member of the Noctuids reposing peacefully after his midnight dissipations.

With regard to the flight of *Acidalia contiguaria*, in spite of our somewhat extensive experience of the insect, we are unable to speak with authority. Like most Acidalias they might reasonably be expected to fly at dusk, and, at this time, we have netted an odd specimen or two, but, though we have been out on the hills at most daylight hours during the twenty-four (excepting perhaps early dawn), we have never discovered a time when they can be taken freely on the wing, even in the exact locality where they are known to abound. I have remarked on the somewhat torpid condition of the sitting insect; even when they are aroused into activity the flight is exceedingly languid and lazy. It very much resembles the hovering flight of the Crambids, and many of these have I netted in the possible hope that they might turn out the real thing, and, once in a way, at rare intervals, I have not been disappointed. And after all, these Crambids were certainly worth a little attention, for instead of our familiar friends *Crambus pratellus* and *C. culmellus*, we were lucky enough on one or two occasions to stumble across a specimen of *Crambus pinetellus*. Considering all things, it is most probable, as my father remarks in his notes, that *Acidalia contiguaria* is at no time very active, and that the insect prefers to idle through its brief imago state in listless and luxurious ease. We have known specimens active, however, and that exactly at the time when they ought to have been on their best behaviour. On certain foolish occasions, when, in the seclusion of the parlour in our apartments, we have partially raised the lids of our boxes to gloat over the precious spoil, and to see whether they have begun to deposit their yet more precious ova, or, at other times, when we have been more legitimately placing the day's captures under a bell-jar, to afford them the joys of social communion with other members of their kind—then hey, presto! the room has been full of them. In an instant, every member of the family has been groping on the floor, or wildly flourishing a net about four sizes too big for the room, while the ornaments and pictures rattle down unheeded, and the weekly expenses mount up to fabulous sums in two disastrous minutes! And among the *débris* on the floor grovels the president of the Lancashire and Cheshire Entomological Society, while from his white and trembling lips issue strange mysterious mutterings. In his calmer moments, when peace is restored, he will assure you he has mentioned nothing that cannot be found in the exchange list of British lepidoptera: but, if so, that must be an exceedingly lurid document, scrupulously to be kept out of the hands of the "young person." And this is, I am afraid, the most interesting thing I can tell you about the flight of *A. contiguaria*. But, seriously, if the insect were at all active, in the multitudes that we have reared, and kept for days during the process of ovulation, surely we must have discovered the time of flight, did it occur with any definite regularity.

With regard to the rearing of the insect I am not, personally, able to speak with much authority, since this was not my department. My two sisters, Mrs. Corbett and Miss Ada Capper, who superintended and cared for many prodigious families of them, will probably inform you that, however placid the parents may be, their offspring in the larval stage certainly do not take after them, the changing of their food in their early, almost microscopical, days, being an anxious performance. At first the feeding of the brood presented a grave difficulty, seeing that in this neighbourhood a constant supply of heather was absolutely unavailable. However, this difficulty vanished when we discovered that the minute members of our brood took readily to knotgrass, and, later, when it was found that they appreciated chickweed with even greater relish, you may be very certain that there was always a little patch in the greenhouse, sacred to its cultivation. Artificially we produced many broods. Our first brood, after the July capture, appeared again in the imaginal state in September. It would have been most interesting to visit north Wales at this season to ascertain whether this were the case under natural conditions, but, although, we were often urged to do so by Mr. Barrett, somehow or other it was never quite convenient to try this interesting experiment. In the heat of the kitchen, brood after brood rapidly passed through all their stages during the winter months, but under this artificial method they rapidly deteriorated in type, and thus frequent excursions for renewal of stock became necessary.

Such then is the story of *Acidalia contiguaria*, like most true stories not untinged with a trace of romance. I trust that you will overlook any technical errors in its narration, since it is told by a layman, standing, alas, outside the magic circle of your freemasonry.

Pentaphyllus testaceus, Hellwig, an unrecorded addition to the British Coleoptera.

By OLIVER E. JANSON, F.E.S.

In view of the publication of a new catalogue of British Coleoptera, and in order to render it as complete as possible, the authors have asked me to furnish them with a record of my capture of this insect, which I believe is generally known, although it has never been published. I found the specimen in June 1876, under a decaying boletus (*Polyporus squamosus*) which I had placed as a trap for coleoptera in the hollow trunk of a partially decayed oak in a hedgerow in a field at Crouch Hill, Hornsey. The locality has since been converted into a "residential estate," and, although I have occasionally since searched for the species in the neighbouring district, I have, up to the present time, been unable to find any other specimens of it.

The species appears to occur over the whole of Continental Europe, and is said to be found under the bark and in the worm-eaten parts of dead or decrepit oaks. It is fully described by Mulsant, *Hist. Nat. d. Coléopt. de France, Latigènes*, p. 198, and a good figure of it is given in Duval's *Genera des Coléoptères d'Europe*, iii., pl. 73, fig. 364, the larva has also been described by Erichson, *Weigm. Archiv*, viii., p. 366.

The genus *Pentaphyllus*, of which there are only two European species, comes in the Heteromera in the family Tenebrionidæ, and the tribe Diaperina. It is allied to *Scaphidema*, *Alphitophagus* and *Platydema*, from which it is chiefly distinguished by the abruptly formed five-jointed club of its antennæ, and from which it derives its name. The species, *testaceus*, however, bears a much more general resemblance to some of the Anisotomides and especially to *Agaricophagus cephalotes*, for which at first sight it might easily be mistaken, and it is a rather strange coincidence that I captured several specimens of this scarce species, by evening sweeping, close to the same spot. Now that collectors' attention will be called to the occurrence of this insect in Britain, it s probable that other examples will be found, although searching for coleoptera in old decayed worm-eaten oaks in fields is usually very unproductive, and it is to this fact probably that the presence of *P. testaceus* in Britain has not been before detected.

Haphazard naming of Aberrations of Lepidoptera.

By J. W. TUTT, F.E.S.

Mr. Prout's note (*anteà*, pp. 109-110) shows that we have reached a *point where the* naming of aberrations of lepidoptera should cease to be haphazard, but should be based on a thorough study of a species over the whole area of its distribution. Time was, when the naming of a striking aberration of a species was not likely to create a synonym, but, owing to the extended systematic work already done on the variation of certain superfamilies of the lepidoptera, the renaming of already described aberrations and varieties is at the present time creating a considerable number of synonyms. It appears to me that in the interests of science this haphazard naming of aberrations should cease, and that students of variation should, before naming any aberration, look up the literature of the subject, at least so far as to know exactly (1) what is the original description of the species—some of our German lepidopterists have renamed the types as aberrations—(2) what other forms of the species have been described. Our continental friends appear to take Staudinger's *Catalogue*, 3rd edition, as their guide on the subject, but this is absurd, as everyone acquainted with the literature of their subject knows, for Staudinger has studiously neglected almost everything done in this direction since the issue of the 2nd edition in 1871, adding only such forms as he himself has described, and a few others apparently selected haphazard from the various German magazines. The result is, that not only Huene but Schultz in the *Illus. Zeitschrift für Entomologie*, Lutzau and others have recently duplicated various names, the latter having been called seriously to book in the *Societas Entomologica* by Kusnezow for renaming the form of *Hadena adusta* which we named ab. *virgata* as far back as 1892 in *British Noctuae*, iii., p. 74. In the last month's *Societas Entomologica*, Fuchs has stupidly renamed *Anchocelis helvola* ab. *unicolor*, as *cinnamomea*. The ignorant critics of those who prefer to name marked aberrations and local races will surely continue their lucubrations, but those of us who are convinced of the wisdom of the practice should not stultify our position by a mode of action which can only bring our work into contempt. The man who names an extra-spotted aberration of *Epinephele tithonus*, without first referring to the original description of the species and to the forms already named in the British and foreign magizines, is more likely to be creating a synonym than otherwise. Let him record the aberration certainly, but if he has neither the time nor library at disposal to work out his subject thoroughly, let him not name it. A man who will take up a single species, obtain long series of the species, not only from the various parts of the British Islands but also from all available points in its foreign distribution, and will then thoroughly work out the literature of the species, will be in a position to discuss the variation of the species and to give a summary of its varieties and aberrations. Such work is valuable, and such tabulations should carry names, but in our complaint against haphazard naming of chance aberrations without a study of the species to the extent we have suggested, we are sure we shall be in agreement with all those lepidopterists who have thought about the matter.

One other point is perhaps worth noting. In naming aberrations we consider that the name should cover the peculiarity noted, *e.g.*, *nigra*, *lutea*, *puncta*, &c., whilst local races or varieties should indicate the locality whence the form comes, *e.g.*, *locarnensis* (the local form from Locarno), *cantiensis* (the local form from Kent), &c.

COLEOPTERA.

LYTTA VESICATORIA AT COLCHESTER.—Last summer I captured a few specimens of this handsome beetle near Colchester, and saw more flying round the tops of ashtrees. They were by no means easy to capture, the largest number taken in one day being six.—BERNARD SMITH HARWOOD, 94, Station Road, Colchester.

GRAMMOPTERA ANALIS, ETC., AT COLCHESTER.—Two specimens of this scarce Longicorn appeared by miscellaneous beating, one near the town and the other at Birch Park. *Orsodacna lineola* was beaten from oak; *Cryptocephalus* 6-*punctatus*, *C. lineola*, *Crepidodera nitidula*, *Haltica pusilla*, and *Cetonia aurata* from various plants and trees; *Saperda carcharias* on a fence; *Bidessus geminus* (three or four), *Trogophloeus pusillus* (one), *Neuraphes angulatus* in dead leaves; and *Staphylinus stercorarius* running on pathways.—IBID.

COLEOPTERA IN THE ISLE OF WIGHT.—In the *Ent. Rec.*, vol. xiv., p. 337, I gave the first portion of a list of coleoptera collected during a holiday spent in the Isle of Wight, in May, 1899. That list included the captures to the end of the *Staphylinidae*, and I now record the remainder:—*Platystethus nitens* (Culver) and *Lestera punctata* (Alverstone) were omitted from the first list. *Bythinus curtisi* occurred sparingly at Alverstone, and *Bryaxis helferi* at Bembridge. *Neuraphes elongatus* and *Scydmaenus pusillus*? at Alverstone, and also at the same place one specimen of *Euconnus denticornis* (which I do not think has been recorded from the island before), and *Agathidium laevigatum*. *Silpha rugosa*, singly at Bembridge, and four specimens of *S. laevigata* at Ventnor. *Saprinus aeneus* and *S. maritimus* were both plentiful on the shore at Sandown. The very local *Acritus punctum* was found under seaweed and refuse on the shore at Bembridge, and a hard morning's work was rewarded by the capture of twenty-five specimens. One example of *Platynaspis luteorubra* occurred in grass tufts at Culver, and *Phalacrus corruscus* and *Olibrus bicolor* were swept at Sandown. *Stilbus testaceus* and *Cercus pedicularius* occurred in a marshy spot at Alverstone, and *Meligethes aeneus* at Sandown. *Laemophloeus duplicatus* and *Sylvanus unidentatus* were taken in company under bark at Newchurch. *Enicmus testaceus* singly in fungus on a decaying tree at Sandown. *Atomaria linearis* abundantly, and *Limnichus pygmaeus* singly, at Culver. *Heterocerus laevigatus* was very plentiful at Bembridge, and of the local *H. fusculus* twenty specimens were taken from its old haunts at Luccombe. *Onthophagus vacca* was found in great abundance at Luccombe. *O. nuchicornis* sparingly on the shore at Sandown, and *O. ovatus*, by cutting and shaking grass tufts, at Culver. *Aphodius granarius*, *A. plagiatus*, *A. pusillus*, *A. sputator* and *A. obscurus* were all taken at Sandown, and *Lacon murinus* and *Corymbites tessellatus* were also both met with at Sandown. One dead and badly damaged specimen of *Corymbites castaneus* was picked up on the shore under the cliff at Sandown, it had evidently been blown over and battered by the sea. Stephens recorded this very rare insect from the Isle of Wight. *Malachius viridis* and *Psilothrix nobilis* were both taken at Ventnor, the latter being extremely plentiful, almost every flower (mostly buttercups) on the grass slopes above the cliffs being occupied by them. *Cryptocephalus aureolus* occurred sparingly on the same flowers. *Chrysomela banksi* was shaken out of grass tufts at Culver cliff, and *Prasocuris* phellandrii swept from herbage near the marshy spot at Alverstone. *Longitarsus melanocephalus* and *Haltica pusilla* by sweeping at Ventnor. *Phyllotreta punctulata*, at Culver, and *P. undulata* and *P. tetrastigma* were taken on the wall of the coastguard station at Sandown. *Ochrosis salicariae*, from a wet spot near Sandown. *Crepidodera ferruginea* and *C. rufipes*, at Ventnor, and *C. aurata* was abundant at Alverstone. *Chaetocnema subcoerulea*, one specimen at Sandown. *Psylliodes affinis* and *P. dulcamarae*, on woody nightshade at Ventnor, the former being very plentiful. *Cassida nobilis* was common at roots of plants near the shore at Bembridge. *Opatrum sabulosum* was not uncommon round about Culver, and *Meloë proscarabaeus* var. *cyaneus* occurred at a grassy spot at Alverstone. *Notoxus monoceros*, *Anthicus humile*, *A. instabilis* and *A. antherinus*, all occurred in plenty at Bembridge. A large number of Apions were very abundant, amongst which may be mentioned—*Apion difforme*, *A. varipes*, *A. apricans* and *A. trifolii* at Alverstone. *A. radiolus* (Niton), *A. miniatum*, *A. livescerum*, *A. seniculum* and *A. tenue*, at Ventnor. Cutting and shaking grass tufts at Ventnor produced the following:—*Otiorrhynchus atroapterus*, *O. scabrosus*, *O. ligneus*, *O. sulcatus*, *O. rugifrons*, *Trachyphloeus squamulatus*, *T. scaber*, *T. alternans*, *Liophloeus nubilus*, *Philopedon geminatus*, *Atactogenus exaratus* and *Barynotus obscurus*. Seven specimens of *Sitones crinitus* were bottled at Ventnor, together with three of *S. puncticollis*, whilst *S. humeralis* and *S. lineatus* were plentiful in many places. *Hypera plantaginis*, and a specimen of another species of *Hypera*, which I have not yet been able to determine, but which I hope may prove to be *H. elongata*, turned up at Culver, and also *Orthochaetes setiger*. One specimen of *Liparus coronatus* was found crawling on a path near Ventnor. *Thryogenes nereis* (Alverstone), *Bagous alismatis* and *B. limosus* occurred on plants in the ditches near Newchurch; *Tychius schneideri*, *T. tomentosus*, *Gymnetron pascuorum* and *Rhinoncus pericarpius*, at Culver; *Mecinus pyraster* at Ventnor, and *Ceuthorhynchidius floralis* at Sandown.—WILLOUGHBY ELLIS, F.E.S., Western Knowle. *April 6th*, 1903.

PRACTICAL HINTS*.

Field Work from Middle to End of May.

1.—Towards the end of May the larvæ of *Penthina capraeana* are to be found in the spun-together shoots of *Salix caprea*. This species has a decided preference for woods. The larvæ can be "sleeved" on growing sallow and left until they have pupated in the leaves.

2.—*Sericoris euphorbiana* flies freely in the afternoon sunshine amongst its foodplants, *Euphorbia paralias* and *E. amygdaloides*.

3.—If the leaves of *Vaccinium vitis-idaea* and *Arctostaphylos uva-ursi* be carefully examined, some may be found joined together and discoloured; these will contain, according to the season, larvæ or pupæ of *Euchromia mygindana*.

4.—A close inspection of *Scilla nutans* will disclose silken webs amongst its spikes of blossoms; in these webs are feeding larvæ of

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* "Practical Hints for the Field Lepidopterist," Pts. I and II, each contain some 1250 practical hints similar to these, but relating chiefly to the Macrolepidoptera. *Interleaved for collector's own notes.* Price 6s. each part.

Sciaphila sinuana. This moth is much more generally distributed than is commonly supposed, and when more thoroughly worked for, will, no doubt, be found to have a very wide range.

5.—About the middle of May the larvæ of *Bactra furfurana* occur in the stems of *Heleocharis palustris*. They should be collected in quantity, as the moths vary very considerably.

6.—At the end of May, *Phoxopteryx upupana*, in its restricted haunts, flies freely in the afternoon sunshine. It keeps very high up, so that, unless provided with a fifteen- or twenty-foot pole, hardly a specimen will be caught, though numbers may be seen.

7.—About the middle of May, *Phoxopteryx lactana* is to be taken in considerable numbers at rest on stems of *Populus tremula*. Search for them should be made before the sun shines on the tree-trunks, as then they are comparatively restful, but when warmed by the sun's rays they are most annoyingly frisky.

8.—*Coccyx ochsenheimeriana* flies at the ends of branches of *Pinus cephalonica* and *P. smeathmanni* in the afternoon sunshine. Its small size and dark colour make it difficult to detect. If this moth were more sought after there is no doubt it would prove to be not so local as is the prevailing opinion.

9.—Often at the end of May *Veronica chamaedrys* has its charming flowers made even more attractive by the beautiful *Adela fibulella* resting on them.

10.—If the heads of bloom of *Sisymbrium alliaria* are inspected during the latter part of May, *Adela rufimitrella* will be seen upon them. Later on in the season its larvæ are to be found in the seedpods of *Sisymbrium alliaria*.

11.—The larvæ of the very local *Hypercallia christierniana* are to be obtained towards the end of May in united terminal shoots of *Polygala vulgaris*.

12.—By watching, on a sunny day, a fence well advanced in a state of decay, *Oecophora olivierella* will in all probability be seen flying along or running over it.

13.—Towards the end of May a critical examination of leaves of *Aira caespitosa* and *Sesleria caerulea* may possibly result in finding larvæ of *Elachista adscitella*. The larvæ mine the grass leaves. The mines not being at all conspicuous are at first difficult to see, but when a few have been found one's eyes readily detect them. Collect the leaves when the larvæ are nearly full-fed, and place them in a jar with water and there will be no further trouble, as the larvæ, when full-fed, will quit their mines and pupate on the leaves.

NOTES ON COLLECTING, Etc.

NOTES ON SOME WINTER LEPIDOPTERA OF THE MEDITERRANEAN LITTORAL.—I spent a few days at Brindisi, in the extreme south of Italy, during the last week in January and again during the first week of March, 1903, and, during the time I was there, I made several rambles into the surrounding country, which consists, for the most part, of vineyards and olive plantations. Between the plantations, however, one frequently finds narrow lanes almost overgrown with low plants, and often ending in a miniature marsh. It was to these lanes I paid most attention as being the likeliest spots for lepidoptera. In January I found one larva of *Syntomis phegea* nearly full-fed, but saw little else beyond one or two examples of *Colias edusa*, one specimen of *Pararge megaera* and a few more or less disreputable specimens of *Sesia* (*Macroglossa*) *stellatarum*. In March, I found *Colias edusa* quite fresh and in goodly numbers on a sunny hillside a little way out of the town ; whilst *P. megaera* was in great plenty in the same situation. *Sesia* (*Macroglossa*) *stellatarum* was to be found in plenty hovering over the masses of rosemary which was in full bloom along the roadside and on the hills. Freshly-emerged specimens of *Pieris brassicae* and *P. rapae* were met with, and also hibernated *Aglais urticae*, *Pyrameis atalanta* and *Gonepteryx rhamni*. One or two examples of *Plusia gamma* were taken round the electric lights on board the P. & O. ss. Osiris in Brindisi harbour. I saw a very large hawk moth darting about in the bright sunshine in an orange plantation one morning, but was unable to capture it. Would this be *Daphnis nerii?* In a neighbourhood in which every shepherd and goatherd carries a gun the whole year round, it is not surprising that bird life is scarce. Lepidoptera suffer but little, therefore, round Brindisi from avian foes, though the place of the birds in this respect is more than filled by the lizards, which are extremely abundant, and whose agility is absolutely astounding. The Brindisi lizards are for the most part the little green wall lizards (*Lacerta muralis*), whose dorsal coloration is a bright green, and thus harmonises with the grass and low vegetation. I have seen them absolutely lie in wait under a trailing stem of rosemary blossom, and then suddenly dart out and seize the big violet-winged carpenter-bee (*Xylocopa violacea*), or the swift-flying *Sesia* (*Macroglossa*) *stellatarum*, as it hovered over the flowers. They will even chase *Colias edusa* for many yards up and down the hillside, proceeding by a series of short but very rapid leaps.—J. A. Simes, 24, Northwold Road, Upper Clapton, N.E. *April 21st*, 1903.

The capture of Polyommatus hylas at Dover.—I have just seen in the *Entomologist's Record* for December last, your observations on the scanty notice of my capture of *Polyommatus hylas* at Dover. It is a fact that there were no lepidopterists who seemed to take the least interest in, what I should call, so important a capture, except, I believe, Dr. Chapman. The details of the capture are as follows:—First, the note from my diary reads—"Sunday, September 7th—Went to ——— and took fine *Colias edusa*, ♀ *Polyommatus corydon*, *P. astrarche* and *P. icarinus*." A side note made about ten days after with reference to the last specimen reads:—"This proves to be *P. hylas*." I took the insect sitting, and noticed the basal spots were wanting, and so, as the note says, took it for *P. icarinus*. It was in my bottle for a week as I was busy with other insects for my collection that is placed in the Dover Museum. On pinning it I saw, what appeared to me, a somewhat familiar underside, and, on semirelaxing it, at once saw that I had *P. hylas*. September 7th was the last day I took a net out, but had I recognised my capture at first, I should have examined every Lycænid I could find. The specimen is now in the collection of British butterflies in the South Kensington Museum. Mr. Gray, curator of the Dover Museum, said he thought he remembered, when he collected, taking *P. adonis* without bars on the fringes. If he did so we know what that would mean. My specimen was perfectly fresh and I do not believe it had been out four hours. I took it about noon.—G. O. SLOPER, F.E.S., Hôtel Beau Site, Aigle, Suisse. *April 18th*, 1903.

HEMIPTERA IN THE ISLE OF WIGHT.—During a visit to the Isle of Wight in May, 1899, the primary object being to collect coleoptera, lists of which have already been published in the *Ent. Record*, the following Hemiptera were met with—*Podops inunctus*, common at Culver Cliff, at which place also occurred *Sehirus bicolor*, *S. albomarginatus*, *Coreus scapha*, *Dasycoris hirticornis*, *Stenocephalus agilis* and *Asiraca clavicornis*. At Alverstone, *Syromastes marginatus* was taken, and at Sandown the following were captured: *Scolopostethus adjunctus*, *S. contractus*, *Rhyparochromus chiragra*, *Stygnocoris arenarius*, *Cymus claviculus*, *Naucoris cimicoides*. At Bembridge I found *Piesma quadrata* and *Monanthia cardui*.—H. WILLOUGHBY ELLIS, F.E.S.

CURRENT NOTES.

Our next four numbers will be published on June 1st (no. 6), July 1st (no. 7), July 20th (no. 8), and September 15th (no. 9). We publish this notice here as quite a number of our subscribers write us regularly about August 16th stating that no. 8 has not yet reached them, when, as a matter of fact, they have had it three weeks.

We are pleased to hear that Mr. E. E. B. Prest, M.A., F.Z.S., and Dr. H. M. Stewart are engaged upon a new edition of Merrin's *Lepidopterist's Calendar*. We understand that these gentlemen desire the assistance of practical workers, so that the book may be made as complete as possible; any entomologist willing to assist is asked to communicate with Mr. E. E. B. Prest, Arva, Danes Road, Forest Hill, S.E.

At the meeting of the Entomological Society of London, March 18th, 1903, Mr. A. Bacot exhibited a number of specimens of *Malacosoma* hybr. *schaufussi* in various stages, including a series of six males and sixteen female imagines, reared during 1902, from one batch of ova laid by a female *M. castrensis*, which had been mated with a male *M. neustria*, and two females reared from another batch of ova the result of a similar cross; also blown larvæ of hybrid parentage, and twigs showing attempts at ovipositing on the part of female hybrids that had paired with hybrid males of the same brood; also series of *M. neustria*, *M. castrensis* and the hybrid moths, reared during 1901, for comparison. He said that the larvæ of the 1902 broods, as stated in the Society's *Proceedings* for June 4th last, exactly followed those of the previous year in respect of their division into "forwards" and "laggards," the former again producing only females, and the latter males. By forcing the pupæ of the "laggards" it was found possible to synchronise the emergences this year, and pairings between the hybrid moths were obtained. The females attempted egg-laying, adopting the position and motions of normal females of *M. castrensis*, but at each opening of the ovipositor they produced only the small drop of cement which accompanies the egg in the normal oviposition of the parent species, resulting in a more or less perfect spiral band of cement upon the twigs. The length of time occupied in producing this result was about the same as that required by *M. castrensis* ♀ for depositing her normal batch of eggs, which are laid at the rate of about eight or nine per minute. Pairings or attempted pairings were also obtained between the hybrid males and females of both the parent species, but only a very few eggs were laid by these females which subsequently recommenced "calling." Perhaps the most interesting feature of the exhibit is the great variability shown by the specimens comprising the larger of the 1902 broods, compared with the remarkable uniformity of the hybrid moths reared during the previous year. Such uniformity appears the more remarkable if we remember the wide range of variability shown by both the parent species, and that a very wide, if not the entire local, range may be found within the limits of a single brood of either species.

At the same meeting Mr. C. P. Pickett exhibited specimens of *Hybernia leucophaearia* and *Phigalia pedaria*, taken at Chingford on February 14th. With regard to the resting-habit of the former species he said it was somewhat curious. The bodies lay in a parallel position to the cracks in the bark of the trees on which they were found, the cross-markings of the wings in an upright position corresponding closely with the lines of the bark. Their colour also harmonised remarkably well with the surroundings. He also exhibited ova of *Dimorpha versicolora* on birch twigs. The parent moths paired at 1.20 p.m., on March 16th, remained *in copulâ* thirty-three and a half hours. The female then commenced crawling about the cage to find some suitable place for laying, and, on the introduction of some birch twigs, deposited thirty-eight ova in ten minutes upon it. By the morning of the 18th she had laid 171 ova, which were cream-coloured and shiny in appearance, but after two or three days assumed the colour of the birch twigs upon which they were placed near the buds. The female in the act of oviposition prefers to rest head downwards, and sometimes uses the hindmost legs for arranging the ova.

At the same meeting Dr. Frederick A. Dixey read a paper, illustrated by lantern slides, "On Lepidoptera from the White Nile, collected by Mr. W. L. S. Loat, F.Z.S.; with further notes on Seasonal Dimorphism in Butterflies." He said that the collection of butterflies which had been made at intervals by Mr. Loat during his tenure of office under the Egyptian Government, was of special interest on account of the accurate data which accompanied the specimens. Mr. Loat's collecting grounds were in the neighbourhood of Kaka, about 11° N. lat.; and of Gondokoro, about 6° further south. The meteorological conditions at the time of collecting were generally those of the dry season, though at Kaka the rains were just beginning. Most of the examples of seasonally dimorphic species belonged to the "dry-season" phase, but there were some curious exceptions. Perhaps the most remarkable of these was *Teracolus daira*, Klug, specimens of which, caught in January, during the height of the dry season, were of the full "wet-season" colouring, while some of those taken at the beginning of the rains were much "drier." The large proportion of *Pierinae* to the whole number of captures was noticeable, as also was the general likeness of the whole assemblage to the butterfly fauna of Aden; the different forms of *Limnas chrysippus*, for example, were found by Mr. Loat all flying together at the same spot, just as is the case at Aden. The collection brought to light no new species; it contained, however, a single example of the male of *Pinacopteryx venatus*, Butl., of which only two specimens, including the type, and both females, have hitherto been known to science. Mr.

Loat's series did not seem to favour the opinion that had been held that *Teracolus eragore*, as described and figured by Klug, was the dry-season form of *T. yerburii*, Swinh. It appeared from this and other evidence that Mr. G. A. K. Marshall was right in dissociating the two forms. The weakness of the reasons given for the contrary view had lately been pointed out by Colonel Yerbury. With regard to the general question of seasonal dimorphism, a point that deserved notice was the greater intensity and greater persistence of the cryptic dry-season coloration of the undersurface, which often characterises the female sex. This might be illustrated from among Mr. Loat's specimens, but the principle was of wide application, and was operative in both hemispheres. In the genus *Teracolus* especially, the "wet-season" female often retained some of the "dry-season" garb, and, in certain cases (as in *T. puellaris* and *T. phisadia*), the female could scarcely be said to have a "wet-season" phase at all. The significance of these facts lay no doubt in the special need for protection experienced by the female sex. Professor Poulton had lately given strong grounds for believing that, on the whole, concealment was a more efficacious means of defence for moderately distasteful forms than the display of warning colours, especially when the pursuit was keen, and the instances here adduced seemed to show that it might, in some cases, be of advantage for the female of a given species to remain cryptic in the wet season, even though the male should assume brighter colours with the advent of a more copious supply of insect life. An interesting parallel with the seasonal changes in *Precis antilope* and *P. archesia*, so carefully worked out by Mr. Marshall and Professor Poulton, was furnished by the Central and South American *Pyrisitia proterpia*, Fabr. (a Pierine allied to *Terias*), with what is doubtless its dry-season phase, *P. gundlachia*, Poey. Here, as in *Precis*, the dead-leaf appearance of the undersurface in the dry-season form is enhanced by the falcation of the forewings and the development of "tails." These changes of shape are found in the *gundlachia* form of both sexes, but are intensified in the female; in the wet-season or *proterpia* form they are retained by neither sex, but the undersurface of the female is duller than that of the male. The simultaneous occurrence in generally dry localities, such as Aden, of forms which, in other places, are associated with contrasting seasons, was not easy to explain. Professor Poulton had shown that, in several species of *Precis*, the dry-season form was larger than the wet, and had, on that fact, founded the inference that the dry-season form must have been predetermined in the larval stage. But there was reason to believe that, in many genera, and perhaps even occasionally in *Precis*, the assumption of the characteristic seasonal garb was not determined until a later period—in some cases, the last few days before emergence from the pupa. If it might be assumed that the Aden species in question were in a state so sensitive to meteorological conditions as to respond almost immediately to a few heavy showers, such as were reported to fall there not unusually from January to May, the intermixture of "wet-" and "dry-season," which in many cases meant an intermixture of aposematic and cryptic, forms, might possibly be accounted for. This suggestion could only be verified by observers on the spot.

At the same meeting Mr. Lucas exhibited with the lantern a series of slides illustrating the life-history of Liphyra brassolis, a Queensland species, the larva of which lives in ants' nests, and feeds upon the ant-larvæ. Dr. Chapman stated that the imago, on emergence from the pupa, is clothed with scales highly distasteful to the ant, the scales thus protecting it during emergence from attack, and continuing to do so until such time as it is able to fly, when the scales drop off.

At the meeting of the Entomological Society of London, held on April 1st, Sir George Hampson read a paper on "*Apoprogonia hesperioides*, a remarkable new lepidopterous insect from Zululand." He said that the genus must be referred to the family *Euschemonidae* which is represented by the single species *Euschemon rafflesiae*, Westw., from Australia. In what quarter of the globe the family originated it was impossible to say, but the appearance of the species in question suggested that it was a survival of the scattered remnant of the Antarctic fauna. It was, however, most remarkable that the genus should occur in Africa and Australia alone.

At the same meeting Mr. F. Enock read a paper, illustrated with lantern slides, on "The Life History of *Cicendela campestris*," and a discussion followed as to how far the abundance of food in the larval state affects the development of insects, in the course of which Mr. Enock said that, where the food supply happened to be insufficient, neuropterous nymphs would continue two years in that stage, and Mr. C. O. Waterhouse mentioned a case reported to him of the larvæ of *Aglais* (*Vanessa*) *urticae* which, having exhausted their summer pabulum, retired to hibernate until the following year. Mr. A. J. Chitty said he had observed that coleopterous larvæ under similar circumstances would consume flies; while Mr. H. St. J. K. Donisthorpe said that he had bred successfully a species of the same order by feeding the larvæ on paper. We should like some authority for Mr. Waterhouse's statement, as it appears to us incredible, that a species selected by nature over an area extending from northern Africa to Finmark to hibernate in the imaginal state, should go over the winter in the larval state, especially under the conditions noted.

In the *Societas Entomologica*, xviii., p. 3, Fuchs describes a so-called new aberration of *Orthosia helvola* as ab. *cinnamomea*, and diagnoses it as "Vorderflügel eintönig zimmtrot mit kaum angedeuteter Zeichnung." We would refer the author to *British Noctuae and their Vars.*, ii., p. 163, where he will find this form was named *unicolor* between 11 and 12 years ago. This renaming of well-known forms by the continental lepidopterists is getting a very serious matter for the synonymists.

Of the few American lepidopterists for the work of whom we have had unstinted admiration, the palm must, perhaps, be given to Dr. Harrison G. Dyar. His *List of North American Lepidoptera and Key to the Literature of this order of Insects*,* just received, will add to his reputation as a careful compiler, and a thoroughly hardworking entomologist. To thank the author for so excellent a piece of work is a duty—to attempt to review a catalogue in the strict sense is absurd. So far as a catalogue is to be judged as being of service, by the number of times one finds oneself obliged to refer to it, we have no hesitation in predicting that this list will be to the American what Staudinger's is to the European lepidopterist. Two points, however, astonish us beyond measure, *viz.*, the sequence of the superfamilies, which are more or less at variance with all his published work, and secondly, his acceptance of genera, based on the unscientific method of taking the first species mentioned in a genus as the type, whether or not an intelligent consideration of the genus shows that this species could not have really influenced the author in the characterisation of the genus. The first point is well illustrated by stating that he commences his List with the Papilionids, followed by the Sphingids, Saturniids, Arctiids, Noctuids, Nycteolids, Notodontids, Lymantriids, Lachneids, Bombycids, Platypterygids, Geometrids and Tineoids in order, the latter including the Nolids, Cochlidids, Thyridids, Ægeriids, Pyralids, &c. The second is best illustrated by stating that he appears to accept in the Syntomids, Arctiids, &c., the genera as used by Hampson, whose work in this direction is based entirely on the principle above enunciated. We are utterly at sea, too, as to the principles guiding Dyar in the selection of his families in the superfamily *Bombycoidea* (to us a new superfamily ending) where we get—*Syntomidae*, *Lithosiidae*, *Arctiidae*, *Agaristidae*, *Noctuidae*, *Nycteolidae*, *Pericopidae*, *Dioptidae*, *Notodontidae*, *Thyatiridae*, *Liparidae*, *Lasiocampidae*, *Bombycidae*, *Platypterygidae*, *Geometridae* and *Epiplemidae*. If such a conglomeration as this represents the present state of our knowledge, then our modern methods must be held to deserve all the condemnation that the stick-in-the-mud, alter-no-name-nor-anything-else lepidopterists pass upon them. Still, one suspects that this List is compiled by Dyar the curator, and not by Dyar the biologist, and that the author thinks what we have often stated, *viz.*, that a Catalogue is of use to the extent that it enables one to find what one wants readily, and might often as well be alphabetical, for all the real illustration of biological principles that its arrangement exhibits. As to the materials from which it is compiled it is only when one considers that, at the time the second edition of Staudinger's *Catalogue* was issued, American lepidopterology was almost a negligéable quantity, and then fairly considers the advance that such a catalogue (considered in the light of the arrangement of the genera in the separate families *inter se*, as apart from the arrangement of the list as a whole) as this illustrates in the progress of scientific knowledge, literature and modes of work, that one gets a true grip of what Grote, Packard, Scudder, Smith, Fernald, Edwards, Dyar, Hulst, Clemens, Chambers, Busck, and a few others have done for American entomology. Nor must Lord Walsingham's contributions to American entomology be over looked, for, after Stainton, Chambers and Clemens, he gave a strong impetus to the study of the micro-lepidoptera, which has since been carried on by a small, but exceedingly efficient, band of energetic workers. No fewer than 6022 species are chronicled. We have no doubt that North America possesses almost double this number.

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* Government Printing Office, Washington.

The monograph of the Sphingids on which the Hon. Walter Rothschild and Dr. Karl Jordan have been at work so long, was published on April 21st. It appears to be a monument of patient labour and crammed with exact and important detail. We hope to be able to notice the work in more detail later.

Erratum.—Page 109, line 19, for "bald" read "bred."—R. F. James.

Subscriptions for Vol. XV are now over due.

NOTICE.

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"Bertrose," Gellatly Road, St. Catherine's Park, London, S.E.

EXCHANGE BASKETS.—March 14th, 1903, No. 1 basket.—Major Robertson, Messrs. Fox, Lofthouse, Studd, Riding, Day, Bower, Horne, Bowles, Mera. March 24th. No. 2 basket.—Dr. Riding, Messrs. Walker, Studd, Croker, Robertson, Adkin, Whittle, Atmore, Bower, Woodforde, Ash. [Members who wish to be missed must write to the name preceding their own on list, not to the Secretary]. The names of one or two new candidates for admission would be welcomed and room made as opportunity offered.

Duplicates.—Larvæ: Pennaria and Chrysorrhœa. *Desiderata.*—Larvæ: Prunaria, Artemis (from South of England), and offers of larvæ.—*M. A. Pitman, 11, Park Lane, Norwich.*

Duplicates.—Prodomaria ova from first indoor pairing. *Desiderata.*—Numerous, living stages preferred.—*J. T. Fountain, 191, Darwin Street, Birmingham.*

Duplicates.—Larvæ of A. agathina. *Desiderata.*—Numerous.—*E. F. Studd, Oxton, Exeter.*

Duplicates.—Ova; Croceago. *Desiderata.*—Numerous, early stages preferred.—*Edward Goodwin, Wateringbury, Maidstone.*

Duplicates.—Cassiope, Io, Rubi, Carpinata, Polycommata, Suspecta, Saucia, Ericellus, Buoliana, Sulphurella. *Desiderata.*—Pruni, Porcellus, Bicolorana, Deplana, Rubricollis, Bifida, Fagi, Putrescens, Straminea, Maritima, Brevilinea, Petasitis, Cespitis, Caliginosa, Obscura, Simulans, Interjecta, Orbona = Subsequa, Opima, Contigua, Semibrunnea, Socia, Umbra, and many others.—*H. A. Beadle, 6, Station Street, Keswick.*

Duplicates.—W-album*, T. quercus*, Alveolus*, Lineola, Illustraria*, Gilvago*, Miniosa*, and many others. *Desiderata.*—Ova or larvæ of Designata (Propugnata) and Ribesiaria (Prunata).—*Rev. G. H. Raynor, Hazeleigh Rectory, Maldon, Essex.*

Duplicates.—Z. annulata, *vars.* obsoleta and bi-obsoleta, and intermediates. *Desiderata.*—Offers.—*W. S. Riding, Buckerell Lodge, near Honiton, E. Devon.*

Duplicates.—Pulveraria*, Advenaria*, Repandata (dark)*, Templi (fair), Hastata (fine), Cæsiata, Inornata and larvæ*, Chrysorrhœa*, Viminalis *var.* obscura*, Palpina*, Heparata, Illustraria*, Cinxia*, Albicillata, Ambigua (fair), Ribesiaria (= Prunata), five Fluctuosa (fair), Actæon, Menthastri* *vars.* ochracea, carbonica, Lubricipeda* *var.* radiata (all forms, including black bordered). *Desiderata.*—Iris, Holosericata, Irriguata, Constrictaria, Valerianata, Quadrifasciaria, Dodonæa, Putrescens, Caliginosa, Semibrunnea, &c.—*J. Harrison, 7, Gawber Road, Barnsley.*

Desiderata.—During the season—Ova, larvæ, pupæ, and living imagines of many species. Good exchange.—*H. W. Head, Scarborough.*

WANTED.—For comparison, the loan of two or three specimens of each or any of the following species of the genus *Eriocrania*—E. sparmannella, Salopiella, Purpurella, Kaltenbachii, Semipurpurella, Sangii, Unimaculella. Will do what I can in return.—*Miss Alderson, Park House, Worksop, Notts.*

WANTED COLEOPHORÆ.—As I wish to breed and record the life-history of all the species of *Coleophora*, I should be pleased to receive any cases and living larvæ which entomologists may meet with. I will do what I can in return.—*Hy. J. Turner, 13, Drakefell Road, St. Catherine's Park, Hatcham, S.E.*

WANTED (during spring and summer).—Living *wild* ♀s Atalanta, Cardui, Io, Sinapis, Cardamines, C-album, Egeria, Lucina, Rubiginea, Semibrunnea, Petrificata, Miata, Psittacata and *Derivata, also larvæ* of Repandata and Aurinia from all British localities (except Carlisle and Westmeath), especially Scotch and Welsh, Castrensis, Quercifolia, Interjecta, Xerampelina, Diffinis, Festucæ. Liberal exchange.—*L. W. Newman, Bexley, Kent.*

Wanted (to figure).—Examples of the following larvæ, fullfed: Antiopa, Lathonia, Daplidice, Edusa, Hyale, Livornica, Pinastri, Celerio, Gallii, Euphorbiæ. Will any lepidopterist who collects abroad kindly remember my wants when opportunity occurs of obtaining any of them?—*J. C. Dollman, Hove House, Newton Grove, Bedford Park, W.*

Exchange.—I am desirous of obtaining butterflies from the Malayan Archipelago and the Pacific Islands. For such I offer perfect diurnals from North and South America; North American Coleoptera.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Wanted.—Erycinidæ of the world. Offer for same Diurni from United States, northern South America and Central America, also North American birds' eggs and American-Indian relics.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Hertfordshire County Museum, St. Albans.—A collection of British Lepidoptera is being formed. I shall be thankful if collectors will send me any duplicate specimens they may have to spare. Hertfordshire insects will be specially welcome.—*A. E. Gibbs, Hon. Curator, Kitchener's Meads, St. Albans.*

Albert Memorial Museum, Exeter.—Collectors of British Lepidoptera are asked to kindly give any spare Devonshire duplicates they may have, to assist in the formation of a local collection. Duplicates in other Orders also desired.—*F. R. Rowley, Curator.*

Parasitical Diptera wanted.—Will lepidopterists who may breed any dipterous parasites from larvæ or pupæ kindly forward such as they do not require to me? If so I shall be greatly obliged.—*C. J. Wainwright, 2, Handsworth Wood Road, Handsworth, Staffs.*

Changes of Address.—*S. J. Bell to 24, Dassett Road, Knight's Hill Road, West Norwood. A. Harrison, Delamere, Grove Road, South Woodford, Essex. Douglas A. Onslow, 34, Western Road, Putney, S.W. L. S. Brady to 287, Glossop Road, Sheffield.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W. 8 p.m. —Meetings: June 3rd; October 7th, 21st; November 4th, 18th; December 2nd. Annual Meeting, January 20th, 1904.

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C. The first and third Tuesdays in the month, at 7.30 p.m. Members are particularly requested to bring varieties and aberrations for exhibition. Non-members cordially invited. Exhibits invited at each meeting, especially those illustrative of the discussion, &c. Members wishing to contribute "Communications" are asked to inform one of the Secretaries.

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m.—Hon. Sec., G. E. Shaw, 22, Baythorne Street, Bow, E. Monday, June 8th, "Trees," Miss K. M. Hall. Monday, July 6th, probably a paper on "Flies," F. Morice. No meeting in August. Excursions.—May 23rd, Chingford. Liverpool Street, 2.34 p.m.; return, 1s. May 29th-June 2nd (Whitsuntide). An excursion is proposed for a limited number, from Friday evening till Tuesday evening, to either Cheddar or the Isle of Wight; arrangements will be made at the May meeting, when any who wish to join the party should attend. June 14th, Leatherhead for Headley and Box Hill; London Bridge (L.B. & S.C.R.), 9.25 a.m.; return, 2s. June 20th, Esher to Oxshott; Waterloo, 2.29 p.m.; return, 1s. 10d. June 28th, Sevenoaks for Shoreham; Cannon Street, 9.15 a.m.; return, 1s. 9d. July 12th, Merstham; Cannon Street, 10.25 a.m.; return, 2s. July 18th, Bromley for Hayes and Keston; Holborn Viaduct, 2.37 p.m.; return, 1s. July 26th, Woking to Windsor; Waterloo, 9.55 a.m.; return, 2s. 6d.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. Field Meeting—May 16th, to Ashtead; leave London Bridge (L.B.S.C.R.) 2 p.m., or Victoria (L.B.S.C.R.) 2.14 p.m., or Waterloo (L.S.W.R.) at 2.47 p.m.; fare 1s. 8d. For particulars apply Mr. E. Step, Oakwood House, Barnett Wood Lane, Ashtead.

North London Natural History Society, Sigdon Road Board School, Dalston Lane, N.E. (close to Hackney Downs Stations, G.E.R.).—Meetings second and fourth Tuesdays in each month, at 7.45 p.m.

Carlisle Entomological and Natural History Society.—Meetings held at the Subscription Library, Tullie House, Carlisle. Visitors cordially invited.—Hon. Sec., F. H. Day, 17, Thirlmere Street, Carlisle.

South Eastern Union of Scientific Societies.—The **8th Annual Congress** will be held at **Dover,** June 11th, 12th, and 13th, 1903. Natural History Exhibits for the Congress Exhibition desired. Address Mr. E. W. Swanton, Brockton, Haslemere. Members of Natural History Societies who desire to attend (and their friends) should send the fee, 2s. 6d., to the Secretary, 33, Upper Grosvenor Road, Tunbridge Wells. This entitles them to the Transactions for the current year.

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Mellinia gilvago comes freely to light in August (at Cambridge, Reading, &c.), and is sometimes taken from the lamps in and near towns in large numbers, probably only where avenues of elms exist in the suburbs of the towns.

Towards the end of August, at about 6 p.m., search should be made at the base of ash-trees, and on the *debris* around, for freshly-emerged imagines of *Cirrhoedia xerampelina*.

In the Church Stretton district, imagines of *Cirrhoedia xerampelina* are to be obtained at the foot of some large ash trees, clinging to blades of grass, at the end of August and early in September, the trunks rarely giving a single specimen.

In the middle of August the imagines of *Lithomia solidaginis* occur freely on a piece of boggy heath near Wilsden. At rest this species has a most remarkable resemblance to the excrement of grouse—the male particularly so. It folds its wings round its body, clasps a stone with its legs and raises its body to an angle of about 90°, its markings, colour, shape, and mode of attachment make the imitation almost perfect.

Lithomia solidaginis abounds in Cannock Chase in late August. The imagines are very easy to find, as they sit on the birch-tree trunks during the daytime, principally with their heads thrust into some crevice in the bark, so that their bodies stand out at right angles to the trunks of the trees, rendering them conspicuous. As many as 150 have been taken on one day, the greatest number on a single tree being seven.

The larvæ of *Cucullia lychnitis* will eat *Scrophularia aquatica* as well as *Verbascum*, preferring the buds and blossoms.

Everyone who has the opportunity should devote some days during the first fortnight of August to searching for larvæ of *Cucullia gnaphalii* in the Kent woods. It is easy to make a small, light beating tray of black calico, sewn to a frame of stout iron wire, and, having found an opening in the woods where the golden-rod is plentiful, each plant should be beaten gently with a light stick into the tray, which should be held against the plant-stalk, low down near the ground. Plenty of larvæ of *C. asteris* will be obtained, and of Eupitheciids too, but the larva of *C. gnaphalii* is unmistakable with its dull green colouring and purple dorsal stripe. An average of one to a hard day's work is good (P. C. Reid).

The imagines of *Stilbia anomala* are best taken on Cannock Chase in early August, beginning to make their appearance about 7 p.m., and continuing to fly till about 8.30 p.m. The insect is very conspicuous on the wing, the ample lower wings making it appear almost white when flying; it gets up suddenly out of the heather and short grass, flies ten or twelve yards, and then drops down again, folding its dark upper wings closely over the lower ones, and thus, in a moment, becoming almost invisible, so that, unless one marks very exactly the spot where it falls, it is impossible to detect it. Frequently, however, it will fly up again almost directly, when, of course, it may be "snapped" with the net (Thornewill).

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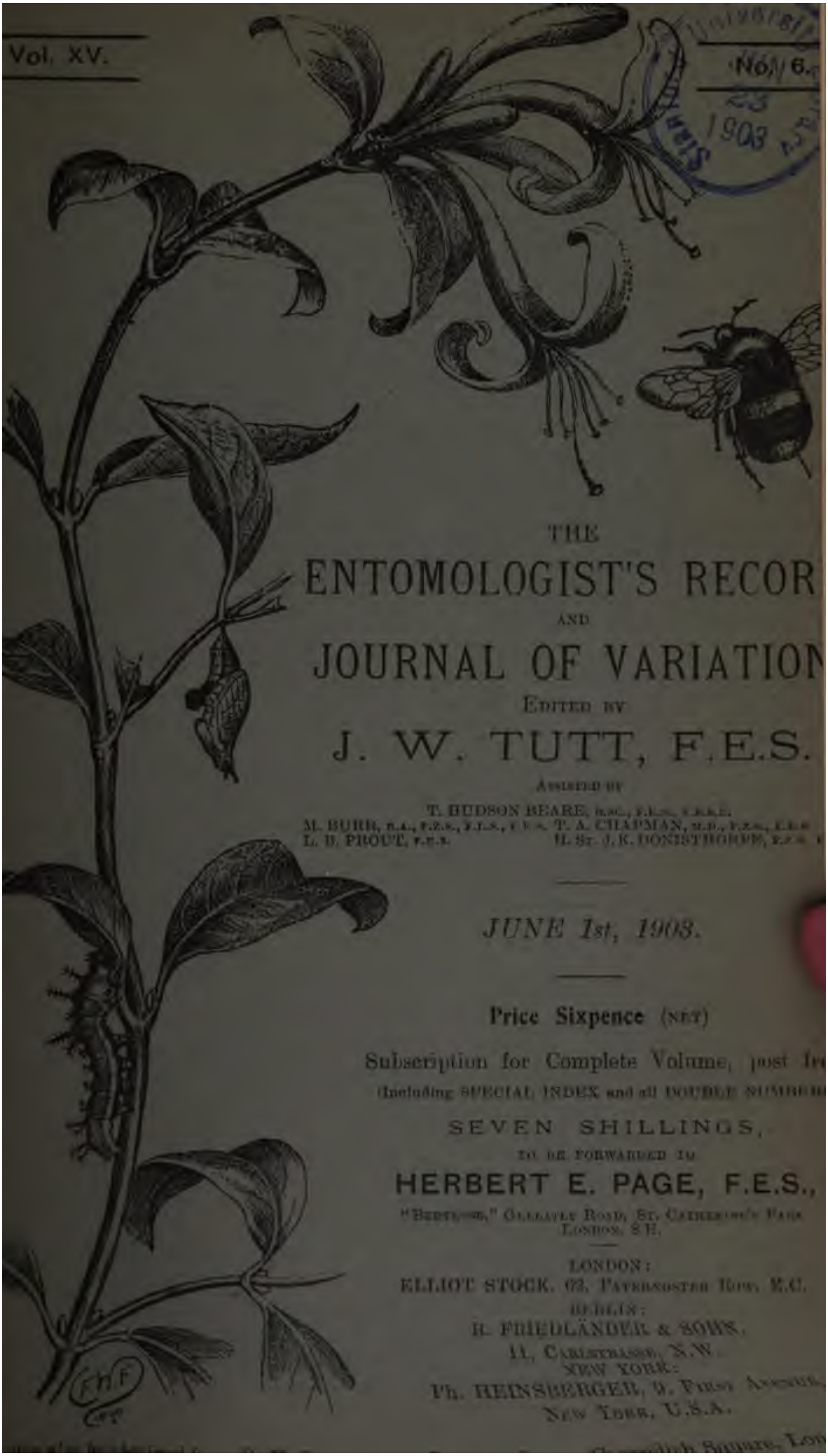

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Lepidoptera of Provence—Hyères.

By J. W. TUTT, F.E.S.

In spite of the fine weather we experienced in England in early March, I had not seen a single butterfly on the wing when I left for southern France on March 26th, nor did I notice a single white butterfly on the journey to Paris, where, indeed, vegetation, as judged by the hawthorn, cherry, pear, and plum blossom, was hardly so forward as in the south of England, although much more so than in ordinary years. At dawn, on March 28th, the train was in the Marseille district and a very heavy white frost lay on the roads as well as the vegetation between Marseille and Toulon, in spite of the fact that the pear, the cherry and the peach blossom were in their fullest glory. At 7 a.m., at Toulon, the sun was hot and the rime had entirely disappeared if, indeed, it had reached quite so far, and when, about 8 a.m., we stepped from the train at Hyères, the lovely city of palms, the hot sun poured down as if it were late June, making us seek the shade of the huge palms and mighty eucalypti that flourish everywhere. *Pieris rapae* and *P. brassicae* appeared in hundreds in every garden, and the scent of the violet-fields came along in heavy clouds causing one to breathe more heavily and to take into one's lungs as much as possible of the fragrant scent-laden air, whilst the roses hung, as if it were early July, in heavy festoons from every porch and arbour, covering the trellised sides of the larger houses or hanging pendent from the pines, palms and eucalypti, into which they had wantonly climbed to display their charming beauty, and roses, such as many of our growers would view with envy, built up the hedges by the wayside, and covered them with blossom. We had been advised to go to the Hotel des Palmiers, and, surely enough, here we found everything for one's comfort, and here we settled for eight days, on a visit in which rest was to be the main feature, a rest that should nerve one up again to go on with the interesting, albeit wearying, details of *British Lepidoptera*, which had occupied more than every moment of all our leisure during all the winter months, and had robbed us of the outdoor exercise that we field entomologists have trained ourselves to require, and the absence of which so soon affects us to our hurt.

Leucophasia sinapis, *Pyrameis atalanta*, as well as dozens of the two common Pierids—*Pieris rapae* and *P. brassicae*—were noticed at the long rows of magnificent stocks now fully in bloom that edged the drive to the door of the hotel, and, as soon as preliminaries were settled, and coffee and rolls disposed of, I folded my net and proceeded to look round. To the left, along the Avenue des Iles d'Or, I soon came into more open ground, and *Pararge megaera*, joined the whites by the wayside, whilst a scurrying "white" soon displayed itself as *Pontia daplidice*. *Cyaniris argiolus* was flying in almost all the gardens, but already worn, and when I turned up a bye-path to the right, to reach the higher ground that I saw in the distance, *Colias edusa* was at once observed, the females busily egg-laying on the clover plants growing in the pea-fields, whilst the males, small, and generally of pale colour, were, so far as those netted gives one a right to speak, already, in many cases, badly worn and not worth setting. Of the three species of butterflies that were really common—*Pieris rapae*, *P. brassicae*, *Pararge megaera*—I now saw great numbers, and the examination of several specimens of the two former species showed (1) a distinct dimorphism in the tint of the apical blotch of *P. brassicae* in both sexes, some examples being pale grey, others intensely black ; (2) the males of *Pieris rapae* varied from quite spotless to well-marked forms, and from those with a faint grey apical spot, to others with an intensely black one, the females also varying greatly, not only in the intensity of the tint but also in the quantity of the grey shading towards the base of the wing The feature of the underside of both species, however, in these southern spring examples, is the heavy black scaling mixed with the yellow of the hindwings. The first approach to the lovely, heavily-flowered genistas betrayed an abundance of *Callophrys rubi*, a species that had evidently already been on the wing some time, and was still coming out, and which is, in suitable places, almost everywhere common along the Riviera, whilst I was astonished at not seeing more examples of *Leucophasia sinapis*, which was evidently also only just emerging. Then I came upon my first *Thestor ballus*, as I have already described (*anteà*, p. 119), and I stuck well to the species until I had a nice series of a dozen or more, only about four, however, being females, whilst a sudden overhead stroke brought down a white that one recognised at once as *Anthocharis belia*, but, although several others were seen, *A. belia* was not to be caught on the hard slopes here, and a sight of probably a dozen on this and the following day only ended in three finding their way into the collecting-box, one of these being a very small example, with pale grey apical tips and discoidal spots, another being large, with a large, dark, apical tip, large discoïdal spot, and very yellow hindwings. Still the usual spring insects were only just on the move, for but two or three *Chrysophanus phlaeas* were seen, with one or two *Polyommatus astrarche* and *P. icarus*, whilst a single *Euchloë cardamines* was all that was noticed. *Papilio machaon*, however, was already on the wing, and *P. podalirius* was frequent, flying about the cherry blossoms, where, if need be, they became an easy prey ; they were fine large specimens, pale in tint, with plenty of blue on the hindwings. The following day I went over the same ground with the idea of increasing my take of *Thestor ballus*. On this occasion, I took a larger number of females, was much interested in capturing an early specimen of *Syrichthus alveus*, two fine large *S. sao*, a few freshly-emerged *Cyaniris argiolus*, and added to my take of *Pontia daplidice* var. *bellidice*, and *Leucophasia sinapis*, whilst, among the moths, *Acontia luctuosa*, *Mecyna polygonalis*, *Aspilates citraria* and *Stigmonota orobana* were already on the wing, and *Nomophila hybridalis* was in abundance. On Monday, March 30th, I went to Carqueiranne, taking the early omnibus from Hyères and arriving at Carqueiranne about 10 a.m. Without knowing anything of the country I struck the right road at once, over the square, up behind the church, and into the lanes that lead over the hills to Hyères. Next to the two common Pierids, *Pararge megaera* was the first insect to show in force, and then, in the pathway, the swift-flying *Argynnis lathonia* was seen, followed by several others in the course of the day, the specimens being small, rather poor in colour, and already past the first pink of condition, but a flash across the road at this moment revealed a ♂ *Gonepteryx cleopatra*, and in a trice I was up on the sloping bank under the wood on the left hand side. Here were several species—*Callophrys rubi* flying commonly, *Anthocharis belia*, *Colias edusa*, and, a few minutes after, a lovely ♂ *Euchloë euphenoides*, whilst at least half-a-dozen ♀ *G. cleo-*

patra came up one after another to investigate the buckthorn bushes. I walked along the bank, but soon had to leave it owing to the blasting operations that were proceeding a few yards further on, but not before I had seen several ♀ *Thestor ballus* flying busily about the *Lotus hispidus*. Having reached the pathway again, a corner covered with bushes and lovely flowering *Cistus* and *Genista* was soon reached, and, over these, *Cyaniris argiolus*, *Callophrys rubi* and *Thestor ballus* were in abundance, whilst, on the pathway, I netted several *Spilothyrus alcaeae*. Investigating the pines that were behind this piece of ground led me to find *Pararge egeria*, whilst *Leucophasia sinapis* was not uncommon, and I captured a ♂ *Pieris napi*, the first I had seen, whilst a single ♀ *Euchloë cardamines* was also taken. Many *G. cleopatra* were now seen, and, as I tramped along the rough ground between two cultivated patches on the right, I put up a *Thais medesicaste*, whilst an occasional ♂ *Euchloë euphenoides* enlivened the scene. But a little entomological goldmine was found about a hundred yards farther on. This was an old overgrown quarry, full of thyme, lavender, cistus, and other aromatic plants. With the first stroke of the net here I captured two *Thais medesicaste* (the last I saw at Carqueiranne), and I soon came across *Polyommatus baton*, unfortunately many were worn, and here I captured my first *Nomiades melanops* of the season, whilst *Thestor ballus* could be called common ; *Colias edusa*, chiefly males, appeared to love this corner, but straight through the quarry flew numerous examples of *Anthocharis belia*, in the best of condition, variable in size, but mostly rather small, and showing considerable variation in the size of the discoidal spot and the intensity of the black apical mark, some of which are quite pale-grey. For *Pontia daplidice* var. *bellidice* the road was the best locality, and many a fine male was swept down, although females were exceedingly scarce. An occassional big *Papilio podalirius* swung lazily on the thyme blossom, but *P. machaon*, of which I saw several, was not to be caught, and the attempt to put salt on their tails failed in every instance. About a mile along the road where the latter goes into the woods, *Gonepteryx cleopatra* was quite common, the females diving deeply into the scrubby bushes to lay their eggs, whilst male *Saturnia pavonia* were in great abundance, dashing wildly about and making one long for a virgin ♀ to bring them within reach. At the corner where the road enters the wood one finds plenty of *A. belia* and *P. daplidice*, in fact, it appeared to be the best spot along the road. *Polyommatus baton* occurs all the way along, here and there commonly. At the top of the ridge just before the road dips down to go on to Hyères, is a path to the right. This I did not take. Mr. Raine later told me that by not doing so I most likely missed half the fauna of Carqueiranne. Such are the fortunes of war. From here we retraced our steps, and filled our boxes, but without coming across any fresh species. March 31st was a bright, sunny day, but a terrific wind was blowing ; a walk up the Toulon road was a failure, scarcely a " white " even was seen anywhere ; it was totally blank for entomology, except that I counted over 200 pupæ of *Pieris brassicae* perched tightly under the coping of a stone gate post in front of a villa on the main road. The morning of April 1st was dull, and I walked from Hyères so as to strike the point at which our exploration terminated on March 30th. Nothing fresh was observed under the woods along which we made our way, except a single *Thais polyxena*, nor did the sun come out in more than (except Carlisle and Westmeath), especially Scotch and Welsh, Castrensis, Quercifolia, Interjecta, Xerampelina, Diffinis, Festucæ. Liberal exchange.—*L. W. Newman, Bexley, Kent.*

Wanted (to figure).—Examples of the following larvæ, inflated: Antiopa, Lathonia, Daplidice, Edusa, Hyale, Livornica, Pinastri, Celerio, Gallii, Euphorbiæ. Will any lepidopterist who collects abroad kindly remember my wants when opportunity occurs of obtaining any of them?—*J. C. Dollman, Hove House, Newton Grove, Bedford Park, W.*

Exchange.—I am desirous of obtaining butterflies from the Malayan Archipelago and the Pacific Islands. For such I offer perfect diurnals from North and South America; North American Coleoptera.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Wanted.—Erycinidæ of the world. Offer for same Diurni from United States, northern South America and Central America, also North American birds' eggs and American-Indian relics.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Hertfordshire County Museum, St. Albans.—A collection of British Lepidoptera is being formed. I shall be thankful if collectors will send me any duplicate specimens they may have to spare. Hertfordshire insects will be specially welcome.—*A. E. Gibbs, Hon. Curator, Kitchener's Meads, St. Albans.*

Albert Memorial Museum, Exeter.—Collectors of British Lepidoptera are asked to kindly give any spare Devonshire duplicates they may have, to assist in the formation of a local collection. Duplicates in other Orders also desired.—*F. R. Rowley, Curator.*

Parasitical Diptera wanted.—Will lepidopterists who may breed any dipterous parasites from larvæ or pupæ kindly forward such as they do not require to me? If so I shall be greatly obliged.—*C. J. Wainwright, 2, Handsworth Wood Road, Handsworth, Staffs.*

Changes of Address.—*S. J. Bell to 24, Dassett Road, Knight's Hill Road, West Norwood. A. Harrison, Delamere, Grove Road, South Woodford, Essex. Douglas A. Onslow, 34, Western Road, Putney, S.W. L. S. Brady to 287, Glossop Road, Sheffield.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W. 8 p.m.—Meetings: June 3rd; October 7th, 21st; November 4th, 18th; December 2nd. Annual Meeting, January 20th, 1904.

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m. Members are particularly requested to bring varieties and aberrations for exhibition. Non-members cordially invited. Exhibits invited at each meeting, especially those illustrative of the discussion, &c. Members wishing to contribute "Communications" are asked to inform one of the Secretaries.

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m.—Hon. Sec., G. E. Shaw, 22, Baythorne Street, Bow, E. Monday, June 8th, "Trees," Miss K. M. Hall. Monday, July 6th, probably a paper on "Flies," F. Morice. No meeting in August. Excursions.—May 23rd, Chingford. Liverpool Street, 2.34 p.m.; return, 1s. May 29th-June 2nd (Whitsuntide). An excursion is proposed for a limited number, from Friday evening till Tuesday evening, to either Cheddar or the Isle of Wight; arrangements will be made at the May meeting, when any who wish to join the party should attend. June 14th, Leatherhead for Headley and Box Hill; London Bridge (L.B. & S.C.R.), 9.25 a.m.; return, 2s. June 20th, Esher to Oxshott; Waterloo, 2.29 p.m.; return, 1s. 10d. June 28th, Sevenoaks for Shoreham; Cannon Street, 9.15 a.m.; return, 1s. 9d. July 12th, Merstham; Cannon Street, 10.25 a.m.; return, 2s. July 18th, Bromley for Hayes and Keston; Holborn Viaduct, 2.37 p.m.; return, 1s. July 26th, Woking to Windsor; Waterloo, 9.55 a.m.; return, 2s. 6d.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. Field Meeting—May 16th, to Ashtead; leave London Bridge (L.B.S.C.R.) 2 p.m., or Victoria (L.B.S.C.R.) 2.14 p.m., or Waterloo (L.S.W.R.) at 2.47 p.m.; fare 1s. 8d. For particulars apply Mr. E. Step, Oakwood House, Barnett Wood Lane, Ashtead.

North London Natural History Society, Sigdon Road Board School, Dalston Lane, N.E. (close to Hackney Downs Stations, G.E.R.).—Meetings second and fourth Tuesdays in each month, at 7.45 p.m.

Carlisle Entomological and Natural History Society.—Meetings held at the Subscription Library, Tullie House, Carlisle. Visitors cordially invited.—Hon. Sec., F. H. Day, 17, Thirlmere Street, Carlisle.

South Eastern Union of Scientific Societies.—The **8th Annual Congress** will be held at **Dover,** June 11th, 12th, and 13th, 1903. Natural History Exhibits for the Congress Exhibition desired. Address Mr. E. W. Swanton, Brockton, Haslemere. *Members of* Natural History Societies who desire to attend (and their friends) should send the *fee, 2s. 6d., to the Secretary,* 33, Upper Grosvenor Road, Tunbridge Wells. This entitles *them to the Transactions* for the current year.

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Mellinia gilvago comes freely to light in August (at Cambridge, Reading, &c.), and is sometimes taken from the lamps in and near towns in large numbers, probably only where avenues of elms exist in the suburbs of the towns.

Towards the end of August, at about 6 p.m., search should be made at the base of ash-trees, and on the *débris* around, for freshly-emerged imagines of *Cirrhoedia xerampelina*.

In the Church Stretton district, imagines of *Cirrhoedia xerampelina* are to be obtained at the foot of some large ash trees, clinging to blades of grass, at the end of August and early in September, the trunks rarely giving a single specimen.

In the middle of August the imagines of *Lithomia solidaginis* occur freely on a piece of boggy heath near Wilsden. At rest this species has a most remarkable resemblance to the excrement of grouse—the male particularly so. It folds its wings round its body, clasps a stone with its legs and raises its body to an angle of about 30°, its markings, colour, shape, and mode of attachment make the imitation almost perfect.

Lithomia solidaginis abounds in Cannock Chase in late August. The imagines are very easy to find, as they sit on the birch-tree trunks during the daytime, principally with their heads thrust into some crevice in the bark, so that their bodies stand out at right angles to the trunks of the trees, rendering them conspicuous. As many as 150 have been taken on one day, the greatest number on a single tree being seven.

The larvæ of *Cucullia lychnitis* will eat *Scrophularia aquatica* as well as *Verbascum*, preferring the buds and blossoms.

Everyone who has the opportunity should devote some days during the first fortnight of August to searching for larvæ of *Cucullia gnaphalii* in the Kent woods. It is easy to make a small, light beating tray of black calico, sewn to a frame of stout iron wire, and, having found an opening in the woods where the golden-rod is plentiful, each plant should be beaten gently with a light stick into the tray, which should be held against the plant-stalk, low down near the ground. Plenty of larvæ of *C. asteris* will be obtained, and of Eupitheciids too, but the larva of *C. gnaphalii* is unmistakable with its dull green colouring and purple dorsal stripe. An average of one to a hard day's work is good (P. C. Reid).

The imagines of *Stilbia anomala* are best taken on Cannock Chase in early August, beginning to make their appearance about 7 p.m., and continuing to fly till about 8.30 p.m. The insect is very conspicuous on the wing, the ample lower wings making it appear almost white when flying; it gets up suddenly out of the heather and short grass, flies ten or twelve yards, and then drops down again, folding its dark upper wings closely over the lower ones, and thus, in a moment, becoming almost invisible, so that, unless one marks very exactly the spot where it falls, it is impossible to detect it. *Frequently, however, it will fly up again* almost directly, when, of course, it may be "snapped" with *the net (Thornewill).*

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among dead leaves which I had placed in the bottom of the bag, chiefly fixing themselves to the edge of a leaf, although a few had attached themselves to the midrib of a leaf, and lay perfectly flat; only a few remained on the growing plant, fixed to the main stem, hanging head downwards, at an angle of about 45° to the stem; a few were noticed amongst the dead blossoms at the top of the bush and were exceedingly well protected, looking exactly like the decayed flower-stems. During February there was a hard frost nearly every night, and the larvæ became rigid, I believe frozen; those among the dead leaves appeared to be more protected. The frosts, however, killed off many larvæ, especially of broods 4 and 5, of which more than a half perished. At the end of February I brought the bags in and carefully examined the contents, the results being: Brood 1—10 healthy larvæ, 10 dead ones. Brood 2—6 healthy, 10 dead, 4 moribund. Brood 3—6 healthy, 11 dead, 3 moribund. Brood 4—3 healthy, 16 dead, 1 moribund. Brood 5—1 healthy, 18 dead, 1 moribund. Total—26 healthy, 65 dead, 9 moribund. The warmth of the kitchen soon made the healthy larvæ active, but the moribund ones gradually died off. Of the healthy remnants, broods 1, 2 and 3 commenced feeding at once, and in a week were casting their winter skins, but at this period nine died. The three larvæ of brood 4 waited some ten days in the warmer surroundings before commencing to feed, whilst the single larva of brood 5 began after fourteen days. The larvæ of broods 1, 2 and 3 spun up between April 7th and 10th, those of brood 4 by the end of April, and the larva of brood 5 on May 8th. The quiescent period between the time of spinning the puparium and the actual change to pupa, lasted five days. The first imago emerged on April 28th after a pupal period of sixteen days. By May 2nd, all the specimens of broods, 1, 2 and 3, were out, the two survivors of brood 4 had emerged by the middle of May, and the single example of brood 5 on May 25th. The actual results from this frozen and then forced section of the five broods are as follows:

1.—6 emerged [=2 orange ♂ s (typical) and 4 yellow ♀ s].
2.—4 ,, [=1 ,, (typical) and 1 banded ♂ (*sordiata*), 2 banded ♀ s].
3.—3 ,, [=1 ,, ,, ,, ,, ,, ,, ,, 1 yellow ♀].
4.—2 ,, [=1 banded ♂ (*sordiata*), and 1 banded ♀].
5.—1 ,, [=1 dark ♀].

Although I tried hard to obtain pairings I only succeeded in one instance, and the eggs proved infertile.

To return to the bulk of broods 1, 2, 3, 4 and 5 which had not been disturbed. Broods 1, 2, 3 and 4 started feeding at the beginning of April, but brood 5 was nearly a month later, although wintered under identical conditions, and some of the larvæ of the other broods were half-fed when they started; when, however, they did commence, some fed up very quickly and were only about ten days later than the larvæ of the other broods, but the remainder hung on a long time, and imagines were emerging from broods 1, 2, 3 and 4 when these spun up, and emergence was a good three weeks later. The results of these broods worked out as follows:

1.—89 orange ♂ s, 45 yellow ♀ s. (End of May to end of June.)
2.—45 ,, and 38 banded ♂ s, 23 yellow and 17 banded ♀ s. (End of May to end of June.)
3.—39 orange and 47 banded ♂ s, 21 yellow and 25 banded ♀ s. (End of May to end of June.)

4.—78 banded ♂ s, 37 banded ♀ s. (End of May to end of June.)
5.—64 dark-banded ♂ s, 36 dark-banded ♀ s. (End of June to July.)

In all 594 specimens were bred. Brood 1 produced some very dark sprinkled forms approaching the Raindean type, the ♀ s were, however, of the usual sprinkled form. Broods 2 and 3 produced some curious forms, including examples of the two aberrations named by Mr. Prout, to which reference has already been made; some of the plain orange ♂ s, too, have a bleached appearance; four reddish-brown, instead of black, pupæ produced three remarkably coloured ♂ s (of a tint approaching that of the ♀) and a very pale-banded ♀ (very similar in tint to that of the three males); many specimens were undersized, sufficiently uniform in the smallness to suggest a small race, although occasional small examples occur in almost every brood. The plain yellow ♀ s in these broods were of a richer yellow than those of brood 1, whilst the banded ♀ s vary from the faintest yellow in their bands to rich chocolate. The banded ♂ s do not vary so much, but nearly all have the hindwings with more chocolate than orange. The ♂ s of brood 4 were all of the banded type, and were similar to the banded forms of broods 2 and 3, the ♀ s also were similar but varied in the tint of the band. Brood 5 was the most remarkable on account of the dark coloration; some of the ♂ s were exceedingly rich in colour, many with the hindwings entirely chocolate in coloration, on the other hand, the orange markings were plain, quite a contrast from the colouring of their parents; only four specimens were sprinkled, but this sprinkling gave them a beautiful appearance; one of these four examples has exceptionally deep-tinted bands, only a small portion of orange showing, and would, except for this, have been entirely chocolate in colour; one ♂ differed from all the others in being of a rich sienna colour; the ♀ s are of rich coloration, with bands of dark chocolate, four examples being exceptionally dark and so little marked with yellow as to be almost unicolorous.

From the imagines obtained from these various broods I obtained the following pairings—(1) Orange ♂ × yellow ♀. (2) Orange ♂ × banded ♀. (3) Banded ♂ × yellow ♀. (4) Banded ♂ × banded ♀. (5) Dark-banded ♂ × dark-banded ♀. (6) Light-banded ♂ × light-banded ♀. (7) Dark-banded ♂ × light-banded ♀. (8) Light-banded ♂ × dark-banded ♀.

The larvæ obtained from these pairings fed up to hybernating stage, and although some were larger than usual at this period, none produced autumnal imagines, although I placed them in the kitchen with the idea of forcing, and they were ultimately placed back with the others. Six of the broods were placed out of doors in sleeves; and the two others were placed in the greenhouse in breeding-cages, but the larvæ of all hybernated about the middle of September. I left the six sleeved broods out of doors with the idea of observing the effect of exposure to the winter weather on them. One brood, examined at the end of September, was found to contain about 150 larvæ about ¼ of an inch in length, and, in addition, four or five earwigs which were promptly killed. I examined the sleeve again in October, but found only 23, and a number of small earwigs that must have devoured the remainder. Other bags also were found to contain earwigs, which were also killed. An examination of the bags in November and December showed that the larvæ were healthy, mostly hidden among the dried leaves which had been placed in the bags. During January of this year these larvæ were exposed to hard frost from the 11th-17th, and, on examining the bags again at the end of February, I found many dead, others looked shrivelled, but probably they were healthy and harmonised better with their surroundings thus. They formed, however, quite a contrast to the two broods in the greenhouse, which were larger, their coats much smoother, and altogether more healthy-looking, whilst I did not find a dead larva. This experience leads one to surmise that many must die in nature, and that, in confinement, success is better obtained by protecting them during the inclement weather. At any rate, it appears that this must be done if one wishes to breed the characteristic large race that is obtained in confinement, a race altogether superior in size to the examples obtained in nature.

Some undescribed aberrations of Angerona prunaria, Linn.

By L. B. PROUT, F.E.S.

In working out this species for his recent paper, read before the City of London Entomological and Natural History Society, on March 3rd, my friend Mr. C. P. Pickett, F.E.S., called attention to two interesting and distinct aberrations which appeared amongst the material he had bred, and which, so far as he could ascertain, had never yet been named; but, in order to avoid the rashness of which our editor and myself have several times complained recently, I undertook to look into the existing literature of the variation of this species before proceeding further. I am now in a position to say that the forms in question, and one other striking aberration, are still undescribed, and I here subjoin diagnoses, besides noting briefly the previously-named forms. Mr. Pickett will be able, if he think necessary, to add further details about these forms, of which I give merely the briefest possible description.

1. *Prunaria*, Linn.—The type form, as is well-known, is uniformly fulvous in the ♂, luteous in the ♀, spotted with fuscous dashes. Linné's type ♂ is extant, and agrees with his diagnosis. Scopoli's *corticalis* (*Ent. Carn.*, p. 216), described as bone-coloured, seems to be a typical ♀.

2. *Corylaria*, Thnb. (= *sordiata*, Fuessl., *ex err.*, *nec* Linn.).—Wings infuscated, excepting a median band on forewings (not reaching to inner margin) and a part of the hindwings, which retain the original ground colour.

3. *Spangbergi*, Lampa.—Unicolorous, without the dark freckling. Lampa described this from the ♀, and I have only seen it in that sex (one in Br. Mus. Coll., from Central France), but I understand it does also exist in the ♂.

4. *Unicoloraria*, Horm. (ab. et var.), ♂.—More unicolorous than the type, with only a few indistinct grey dots, and sometimes a darkened outer margin. Staudinger wrongly unites this Bucovina form with var. *kentearia*; if it be not distinct from all the others, it must be united with ab. *spangbergi*, as the ♂ of that form.

5. *Kentearia*, Stgr. = *sibirica*, Fuchs (var.).—Smaller, paler (♂ pale ochreous, ♀ whitish), densely irrorated with fuscous. This forms a local race in some parts of Asia.

6. *Constirpataria*, Fuchs (ab.).—A casual ♂ aberration of var. *kentearia*, having the whitish colour of the ♀.

7. *Pickettaria*, n. ab., ♂, ♀.—Basal area dark, as in ab. *corylaria*, but its costa narrowly of the typical ground-colour; central area of the ground-colour, except the extreme inner margin, which is very narrowly fuscous; marginal area consisting of narrow fuscous band, pyramidal, its base at inner margin, its apex (rather ill-defined) just above nervure 6, this band followed by a narrow area of ground-colour. Hindwings distinguished from those of ab. *corylaria* by having a blotch of the ground-colour at apex.

8. *Pallidaria*, n. ab., ♂, ♀.—Freckling absent, as in ab. *spangbergi*, but the

portions of the wings which are infuscated in ab. *corylaria* have a shadow of the darkening in ab. *pallidaria*—a nondescript grey shade in the ♂, a golden-brown tinge in the ♀. This form may be said to bear exactly the same relation to ab. *corylaria* as does *spangbergi* to the type. I have seen no other examples than Mr. Pickett's.

9. *Fuscaria*, n. ab.—The dark shade which prevails in ab. *corylaria* is here spread over the whole of the wings, producing an unicolorous infuscated aberration. I have only seen one example, a ♂ from Lauban, from the Zeller collection (now in Br. Mus. Coll.).

COLEOPTERA.

NOTES ON CAPTURES OF COLEOPTERA IN CUMBERLAND IN 1902.—On February 27th, 1902, I took a fine specimen of *Lamprinus saginatus*, Grav., under a stone, this is my fourth specimen of this rare species, the other three were taken in moss. On March 6th, two *Aleochara cuniculorum*, Kr., were found in a rabbit hole; *Ancyrophorus omalinus*, Er., in numbers settling in a boat; whilst on March 16th, I was on Wan Fell, part of Lazonby Fell, and took my first specimen of *Carabus nitens*, L., on a sheep track; and one *Aphodius tessulatus*, F., flying, this is an addition to the Cumberland list; on April 16th, six specimens of *Subcoccinella 24-punctata*, L., were captured on herbage by the river side, and, on April 20th, working the dry grass and rubbish at the bottom of a hedge, I obtained four *Lebia chlorocephala*, Hoff., *Dromius nigriventris*, Thoms., common; and two *Rhinosimus viridipennis*, Steph., with a number of common species. On April 27th, on Wan Fell, in company with Mr. F. H. Day, a very cold day and not much about, *Pterostichus lepidus*, F., three, and *Cymindis vaporariorum*, L., three, were the only captures worthy of note. On May 4th, working the mud by the side of a small stream, a tributary of the Eden, I took *Ochthebius rufimarginatus*, Steph., in numbers, with *Cercyon haemorrhous*, Gyll., and *C. minutus*, Mulls., fairly commonly; *Tachyusa atra*, Grav., and *Myllaena elongata*, Matth., a few; one *Micropeplus porcatus*, Payk., on the side of an overhanging bank. On May 11th, I visited Cumrea Fell, a part of the Pennines, with Messrs. G. B. Routledge and F. H. Day, our object being *Carabus nitens*, L., but it did not put in an appearance, although otherwise we had a fairly successful day—*Pterostichus vitreus*, Dej., fairly swarmed; *P. aethiops*, Panz., was in fair numbers; *Calathus micropterus*, Duft., *Olisthopus rotundatus*, Payk., and *Bradycellus cognatus*, Gyll., were very common; *Bembidium nigricorne*, Gyll., turned up freely on the bare sheep tracks in the heather; *Hydroporus morio*, Dej., occurred sparingly in mossy holes. The best capture, however, was a fine specimen of *Tachinus rufipennis*, Gyll., under a stone, whilst one *Lathrobium atripalpe*, Sharp, and one *Acidota crenata*, F., were very acceptable. On May 21st, I was in Baron Wood fishing, and took a nice *Dyschirius politus*, Dej., and one *Morychus aeneus*, F., on bare patches of sand in the sunshine, in company with swarms of *Bembidium paludosum*, Panz., and *Cytilus varius*, F. On June 3rd, my children brought in ten *Pyrochroa serraticornis*, Scop., taken on an old tree root by the river side, I have only taken this species very sparingly before; whilst on June 11th, I found a nice series of *Trypodendron lineatum*, Er., in roots of newly-felled spruce fir trees; *Asemum striatum*, L., just emerging from its burrows in Scotch fir roots. On June 12th, *Ernobius mollis*, L., was found breeding freely in the bark on larch fence posts; whilst June 15th was spent at Baron Wood, it was a very dull, wet day, but a fine lot of beetles were to be taken, although one had to put up with getting drenched, the best of the captures were—a few *Ancistronycha abdominalis*, F.; one *Corymbites impressus*, F.; several *Sericosomus brunneus*, L.; whilst *Rhynchites cupreus*, L., and *Polydrusus micans*, F., fairly swarmed with a host of commoner species. On July 27th, I went down to look over some flood refuse, and got several specimens of *Hydrocyphon deflexicollis*, Müll., and two *Cryptohypnus maritimus*, Curt. On August 24th, I was on the lower slope of Cross Fell, the highest point of the Pennines, *Agabus congener*, Payk., was very common; *A. arcticus*, Payk., two specimens; *Hydroporus morio*, Dej., fairly common; a few *Rhantus bistriatus*, Berg.; *Ilybius aenescens*, Thoms., common. These all occurred in mossy holes well up the side of the hill; by treading round the edge of one of the holes I obtained a pair of *Gymnusa variegata*, Kies. On December 19th, a nice specimen of *Tetratoma ancora*, F., was found under dead fir bark; whilst on December 22nd, a fine mild day, I had a look at the fence posts round a small wood of mixed trees, principally Scotch fir, with a sprinkling of spruce, larch, oak, elm and beech, with an undergrowth of elder; here I obtained several *Coryphium angusticolle*, Steph., and *Omalium vile*, Er., which occurred on oak posts; *Salpingus foveolatus*, Ljungh., on any kind of post, but principally, however, under the elm ones, only very odd specimens occurring away from the elms; a fine lot of *Phloeophilus edwardsi*, Steph., on the various kinds of post, and occurring the whole length of the wood. I may add that, on January 20th, 1903, I took a nice specimen of *Chrysomela marginata*, L., in flood refuse; on January 22nd, one specimen of *Megacronus inclinans*, Grav., under a stone, one *Aleochara cuniculorum*, Kr., in a rabbit hole, and, on January 28th, whilst digging in a rabbit burrow, I obtained a fine pair of *Choleva intermedia*, Kr., from 12ft. to 15ft. from the entrance. On January 29th, a fine example of *Quedius puncticollis*, Thoms., was found in a rabbit burrow, and on January 31st, at Baron Wood, trying rotten wood, the following species were taken, *Leptusa fumida*, Er., a pair; *Quedius xanthopus*, Er., a pair; *Omalium punctipenne*, Thoms., common; *Rhagium inquisitor*, F., common; all these species were found in birch. In fungi on a birch stump, I took several *Cis bidentatus*, Ol., and *Tetratoma fungorum*, F., occurred commonly. Where no locality is mentioned, Great Salkeld must be understood as the locality.—H. Britten, Prospect House, Salkeld Dykes, Penrith. *April 20th*, 1903.

A NEW ABERRATION OF OTHIUS FULVIPENNIS, F. = AB. DONISTHORPEI, N.AB. —I think that the specimen of *Othius fulvipennis*, F., with unicolorous elytra, recorded by me in the *Ent. Mo. Mag.* as taken in the New Forest, deserves a distinguishing name, and I propose to call it ab. *donisthorpei*, after my friend Mr. Horace Donisthorpe, who is, I understand, at present at work in conjunction with Professor T. Hudson Beare on the British list, and who has been kind enough to look up whether there is any closely allied species known. Mr. Donisthorpe tells me that there is a melanic specimen unnamed in the general collection of the British Museum. My specimen was taken by digging at the roots of a large oak, just as one would dig for lepidopterous pupæ, and was found at a short distance only from the main road that leads from Brockenhurst to Lyndhurst, about a mile from Brockenhurst. The aberration differs from the type in having the elytra concolorous with the thorax, and in being altogether somewhat darker and narrower. The antennæ are dark chocolate, lighter towards the tips, and the palpi are of the same colour, and so are the legs, with the anterior tarsi lighter. The only structural difference that I can see is that the punctures on the head are finer. The outstanding hairs and the pubescence entirely agree with the type, so that it cannot be a distinct species.—ARTHUR J. CHITTY, M.A., F.E.S., 27, Hereford Square, S.W.

TRECHUS RIVULARIS, GYLL., FROM WICKEN FEN.—I have much pleasure in recording the capture of *Trechus rivularis*, Gyll. (*incilis*, Daws.), from Wicken Fen. I find I have one specimen, taken in August, 1900. Unfortunately this has been somewhat damaged, and my recollection is that I had another which was totally destroyed. My impression is that the insect was taken under cut grass, along one of the main thoroughfares of the fen. The insect was first introduced as British under the name of *Trechus incilis*, by Dawson. The records in Fowler are Whittlesea Mere (Dawson), and Holm Fen (Dr. Power). I do not know whether there have been any more captures. The insect is very distinct, and could not be confused with any other. —IBID.

COLEOPTERA IN CUMBERLAND.—A few interesting species are occurring freely in the Eden Valley at the present time. *Ægialia sabuleti*, Payk., is swarming on sandbanks by the river-side. I have only found this species very sparingly previous to this season. At the present time, with a warm day, and on a suitable sandbank, one can see from 20 to 30 specimens in a square yard, and they are quite as active as *Æ. arenaria*, F., though, generally, it is a very sluggish insect. *Hydrothassa hannoverana*, F., is again occurring in the old locality, whilst *Harpalus rufibarbis*, F., is appearing freely on a large sandbank by the river-side, as many as 34 specimens being found under one small piece of rail bar, some quite immature; this species has only occurred very sparingly in Cumberland previously. *Helophorus arvernicus*, Muls., a species often passed over from its very sluggish habits, and being generally covered thickly with mud, I find very freely at the edges of sandbanks, generally out of the water, and amongst the green algæ which grow in damp and shady spots; it can generally be induced to move by splashing, though it is often a considerable time before it moves.—H. BRITTEN, Prospect House, Salkeld Dykes, Penrith. *May 4th*, 1903.

CAPTURE OF MELÖE BREVICOLLIS, PZ. AND M. CICATRICOSUS, LEACH, IN APRIL, 1903.—On April 6th I went down to Weymouth to try and take *Melöe brevicollis*, which Mr. Forsyth had told me was now about. I was fortunate enough during my short stay to capture some nine specimens. On April 9th I went down to Margate for a fortnight with the determination to take some of the Isle of Thanet "Oil" beetles. Good Friday (10th) being beautifully hot and still, I took ten specimens of *Melöe cicatricosus* on that day. After this the weather became truly arctic, and it was with much labour and time expended that I captured in all during my stay some 25 specimens. My friends, Messrs. Chitty and Beare, came over to collect with me on the 14th and 21st respectively, and secured specimens of *M. cicatricosus*. The only other *Melöe* which turned up was the common *Melöe proscarabeus*, sparingly at Pegwell Bay.—HORACE DONISTHORPE.

MONOHAMUS TITILLATOR, F., AND CERAMBYX HEROS, SCOP., TAKEN

ALIVE IN ENGLAND.—In Mr. F. Bates' beautiful collection of British coleoptera is a specimen of *Monohamus titillator*, which was found alive on a willow tree in the Freeman's Gardens, Aylestone Road, near Leicester, by a Mr. Tristram, in the summer of 1895. Though no doubt an introduced species, it has as much right to stand in our catalogue as *M. sartor* or *M. sutor*, as, like both these species, it has been taken at various times alive in this country. Mr. E. A. Waterhouse has a specimen of *M. titillator* which was taken alive at Battersea Park about 30 years ago. In the British Museum collection of Longicornes there is a specimen labelled "taken alive in Surrey." Mr. Bates also possesses a very fine specimen of *Cerambyx heros*, which was picked up alive in Gray's Inn Square in June, 1902, by a workman, who took it to Messrs. Janson. When captured it was not quite mature, having evidently but recently emerged from the pupa.—IBID.

BEETLES AT SUGAR.—It is well known that many species of beetles came to sugar, though such are rarely recorded. I noticed *Rhagium inquisitor*, in the New Forest, June, 1902, *Helops coeruleus*, Eastbourne, July, 1902, *Agelastica halensis*, in swarms at Freshwater, August, 1902, all coming to the sweets spread for lepidoptera.—C. W. COLTHRUP, 127, Barry Road, East Dulwich, S.E.

COLEOPTERA IN CUMBERLAND IN EARLY SPRING.—The weather so far has been anything but propitious for field work, but whenever a finer day than usual permitted a few hours' collecting, the results have invariably proved satisfactory, especially from a county faunistic point of view. Several additions have been made to the Cumberland list of indigenous species. *Eumicrus tarsatus*, Müll., turned up in hedge refuse in small numbers, and, though a common beetle generally, does not appear to have been found here before. Quite a lot of species occurred in this hedge refuse, the best perhaps being *Aleochara ruficornis*, Grav., and *Cholera anisotomoides*, Spence. Other species were *Stomis pumicatus*, Panz., *Patrobus excavatus*, Payk., *Amara lunicollis*, Schiod., *A. ovata*, F., and several common members of the same genus; *Ocypus brunnipes*, F., *Philonthus albipes*, Grav., *Stilicus affinis*, Er., *Stenus ossium*, Steph., *S. impressus*, Germ., *Olophrum piceum*, Gyll., *Homalium excavatum*, Steph., *Megarthrus sinuatocollis*, Lac., *Homalota gregaria*, Er., *H. longicornis*, Grav., and numerous others of the genus, *Ips 4-punctata*, Herbst, and *Longitarsus anchusa*, Payk. A single *Ocypus fuscatus*, Grav., was found under a stone close by. An hour or two's work at bark in March produced a nice series of *Clinocara undulata*, Kr., another addition to the Cumberland fauna, and one of the liveliest beetles I have ever bottled. On the same day a few *Quedius fumatus*, Steph., were obtained by sifting dead leaves. I have not done anything with the water-net yet, but *Haliplus fulvus*, F., *Brychius elevatus*, Panz., and *Deronectes 12-pustulatus*, F., were found clinging to an old tree root in a backwater of the river Petteril, and, on the banks of the same stream, one or two *Homalota insecta*, Thoms., and *H. graminicola*, Gyll., were captured. In the same district *Hylesinus crenatus*, F., was found boring into ash.

A visit to Skiddaw added *Homalota tibialis*, Heer, to the county list. It occurred freely in moss above 2000ft. *Arpedium brachypterum*, Grav., was found at the same time, but less freely. *Calathus* var. *nubigena*, Hal., was in fair numbers. The six or seven specimens I have set are the finest of this form I have yet taken. A single dead *Otiorrhynchus maurus*, Gyll., also from moss, is an interesting verification of an old record. A few *Pterostichus vitreus*, Dej., were noticed under stones, but the visit was too short for extensive collecting.

A day's work in the Eden valley, towards the end of April, produced some interesting insects. From dry flood refuse stranded in hedgerows, *Crepidodera rufipes*, L., and *Tachyporus pallidus*, Sharp, were beaten in some numbers, with *Corticaria denticulata*, Gyll., *Atomaria atricapilla*, Steph. (first county record), and other things. From flood refuse in the open fields came *Mantura obtusata*, Gyll., *Dromius nigriventris*, Thoms., *Anchomenus micans*, Nic., *Philonthus sordidus*, Grav., *P. decorus*, Grav., *Omias mollinus*, Boh., and many more species. *Philonthus vernalis*, Grav., two specimens, is another addition to the local list. On the sandy banks of the river *Ægialia sabuleti*, Payk., was in plenty, with a little *Oxypoda* not yet determined. *Harpalus rufibarbis*, F., was also common under bits of wood and fencing rail lying on the sand. Under one short rail I counted 33 specimens. A few fine *Aleochara cuniculorum*, Kr., were taken by working rabbit burrows, and *Hylastinus obscurus*, Marsh., and *Phloeophthorus rhododactylus*, Marsh., in abundance under bark or dead broom.

In addition to the species I recorded from Newton Regny Moss, as new to Cumberland (*Ent. Record*, vol. xv., p. 77), I should mention *Philonthus corvinus*, Er., and *Phyllotreta flexuosa*, Ill., two or three specimens of each being secured by shaking moss over paper.—F. H. Day, F.E.S., Carlisle. *May 14th*, 1903.

PRACTICAL HINTS*.

Field work for June.

1.—If during the early part of this month the terminal shoots of *Salix capraea* are carefully examined, some will be found to have their leaves spun together. These may contain pupæ of *Penthina capraeana*.

2.—Anyone visiting the coast in the Shields and Hartlepool districts during the first fortnight in June, should obtain pupæ of *Ephippiphora grandaevana*. They are to be found in long silken tubes at the roots of *Tussilago farfara*. The best way to secure the pupæ is to thrust one's fingers well into the sand round the coltsfoot and gently move them from side to side. This will cause the sand to fall away and leave the tubes exposed.

3.—Throughout this month *Stigmonota nitidana* is to be found flying round oak trees or sitting on their leaves in the sunshine. This spceies is seldom moving before 3 p.m. or after 6.30 p.m., and is confined to woodland districts.

4.—On bright and still afternoons *Whittleia retiella* may be found flying over low herbage in salt-marshes. Its chequered markings and rapid flight causes it to be very easily overlooked.

5.—*Tinea bistrigella* flies throughout this month amongst its foodplant (*Betula alba*). It is to be obtained equally freely either in the morning or afternoon. Unless a position is chosen giving a fairly open and clear space, so that one may see the moths flying against a light background, very few will be caught or even seen.

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* "Practical Hints for the Field Lepidopterist," Pts. I and II, each contain some 1250 practical hints similar to these, but relating chiefly to the Macrolepidoptera. Interleaved for collector's own notes. Price 6s. each part.

6.—A sunny afternoon during the early part of June should produce *Lampronia luzella*. The moth flies fast, and just over low growing vegetation, being most partial to wide ridings in woods. If carried for only a short time in pillboxes in one's pocket or satchel, this species is utterly spoiled and generally dies. The only method to obviate this trouble appears to be by filling a tin with freshly gathered grass and burying in it the pillboxes containing moths.

7.—*Argyresthia glaucinella* occurs in this month amongst oak, preferring the scrubby pollards usually to be found in well-kept hedgerows. The moth is most unwilling to fly when beaten from its place of concealment, and has a very unpleasing knack of falling to the ground, when, unless one is prepared for the habit, it is more likely to be taken for anything than a moth.

8.—From the commencement to the third week in June, *Elachista gangabella* flies in the late afternoon, but not unless the day is a calm one. Unlike most of the species of the genus *Elachista* it does not fly amongst its foodplant (*Dactylis glomerata*), but from four to five feet from the ground. It frequents the ridings in woods and hedgerows.

9.—About the third week in June is a good time to collect pupæ of *Tortrix branderiana*. They are to be found in leaves of *Populus tremula*, having a corner turned over and secured at intervals by sundry strands of white silk. It is well to sever these silken bands, or the aspen leaf, by contraction in drying, may press upon and injure the pupa. The pupa, which is jet black, is small in comparison with the moth it produces.

10.—Towards the end of the month, *Peronea shepherdana* larvæ are to be sought in drawn-together terminal shoots of *Spiraea ulmaria*. The species is very local, being strictly confined to fen and marsh lands.

11.—*Eupoecilia sodaliana* should be searched for about the middle of June. Although very local, it may, where it occurs, sometimes be taken in fairly large numbers. It flies from sunset to 8 p.m., after which it is to be found at rest on the leaves of its foodplant, *Rhamnus catharticus*.

12.—In mid-June if *Sedum acre* be carefully watched in the sunshine, most probably the beautiful *Glyphipteryx equitella* will be found flying over or resting upon it.

13.—*Argyresthia abdominalis* occurs amongst *Juniperus communis* at the end of June. It is best obtained by beating, but a sheet or an umbrella should be placed under the bushes, as far more moths fall to the ground than take wing.

14.—The very scarce *Gelechia osseella* may be looked for from the middle to the end of June. It occurs in woods, and on downs and rough pastures, flying after 4 p.m. low down amongst grass, &c., and is easily passed as a rush-feeding *Coleophora*.

NOTES ON COLLECTING, Etc.

Spring Lepidoptera at Menaggio.—On Thursday, April 9th, at 2.20 p.m., I left London without having seen a single living butterfly of the year. On Saturday, the 11th, at 11 a.m., I found myself under the (scanty) shade of the olives, near Menaggio, watching *Papilio podalirius* toying in mid-air, *P. machaon* skimming over the strips of meadow between the vineyards, *Euchloë cardamines* with its dash of colour, the delicate *Leptidia sinapis* flying over the blossoms in the grass, and the familiar *Pararge megaera* sunning itself with open wings on a hot stone. After dull winter days this was a delightful experience. I remained in Menaggio till April 20th, and, during those few days, noted about thirty species of Rhopalocera. *P. podalirius* was very common and especially attracted to the upper branches of the plum trees around the town, then in blossom. *P. machaon* was less common and frequented the grassy slopes. *Pieris rapae* less common than *P. napi*, but, perhaps the former was not yet fully out, as Frey states (*Lep. der Schweiz*, p. 5) that *napi* is rather the earlier in Switzerland, and this remark probably applies also to North Italy. *Euchloë cardamines* was abundant, the males varied a good deal in size; several females were noted. *Leptidia sinapis* was common. One *Colias hyale* and two or three *C. edusa* were seen. *Gonepteryx rhamni* was very conspicuous on the wooded slopes. *Vanessa io* was seen settling on an old wall, but *Aglais urticae* was more numerous, while *Eugonia polychloros* appeared occasionally. A few *Euvanessa antiopa* were seen but could not be netted. I noticed, however, that they were all white-bordered. *Polygonia c-album* occurred sparingly. *Argynnis lathonia* common in one sheltered spot. *Pararge megaera* flew about the pathways, and *Coenonympha pamphilus* haunted the strips of meadow-land. *Callophrys rubi* was captured, but was scarce, and only one specimen of *Chrysophanus phlaeas* was noted. In a warm corner a single specimen of *Polyommatus astrarche* was seen, and *Cyaniris argiolus* was taken near Grandola. One larva of *Aporia crataegi*, apparently about to pupate, was observed on a garden wall. The remaining species noticed belonged to the Lycænids and Hesperiids, but were not identified, though I fancy I saw *Cupido sebrus* and *Polyommatus bellargus* among them. We did no serious collecting, and my excuse for offering these casual remarks must be my belief that the district around the lake of Como, on which little appears to have been written by entomologists, would prove interesting to the serious worker.—ALFRED SICH, F.E.S., Corney House, Chiswick. *April 29th*, 1903.

SCARCITY OF INSECTS AT SUGAR IN 1902.—With regard to Mr. Woodforde's note *re* the above (*anteà*, vol. xiv., p. 346), my experience last season was that flowers were the more attractive bait, as I think the following will show. In July last I sugared in Parkhurst Forest, Newport, Isle of Wight, and was not at all satisfied with the few insects which were on the sugar, nor with the way *Thyatira batis* and *Gonophora derasa* kept flitting past my lantern, only occasionally settling, so I turned my attention to the flowers of the bramble, and found *T. batis*, *G. derasa*, *Gonophora libatrix*, *Hadena oleracea*, *Cosmia affinis*, *Calymnia trapezina*, and other moths there in goodly numbers. On July 24th, I sugared some posts at the edge of the cliffs on the way to Beachy Head, with very poor result, *viz.*, one *Xylophasia lithoxylea*, three *Miana literosa*, one *M. strigilis* ab. *aethiops*, one *Caradrina morpheus*, and eleven *Apamea didyma* (*oculea*), and concluded that the flowers up the face of the cliff were getting the lion's share of the visitors, as a number of moths flitted up towards the lantern light and returned down the cliff as quickly as they came. I, therefore, resolved to visit some privet bushes which I had noted on my way up, and which were in flower. As soon as I got to them my conjecture was confirmed, as the buzzing of wings was quite noticeable, and I found that the bushes were alive with moths jostling one another, and barely a flowerhead but had one or two moths. Besides the above species I noted *Agrotis corticea*, *A. segetum* and *A. exclamationis*, worn, *Triphaena pronuba*, *T. comes*, and a number of other species. This was at 10.30 p.m. Again on August 14th, I sugared on the cliffs at Freshwater, and not a single moth came, but a beetle (*Sermyla halensis*) simply swarmed. On the way down, one or two posts of a fence gave me two *Cerigo matura* (*cytherea*), three *Apamea didyma* (*oculea*), one *Caradrina ambigua*, one *Amphypyra tragopogonis*, and two *Luperina testacea*, but nothing else. A little farther on I came to a hedge overhanging a ditch, with bramble and other flowers, and here I was surprised to find both Geometrids and Noctuids swarming, but, having no net with me, and the ditch being too wide to allow of pillboxing, I cannot give the species. This was at 11.15 p.m. On September 10th, I sugared high up on the downs at Dover, away from flowers, and had a good bag. Two evenings later I tried the valley, where flowers were plentiful, and selected a lane, on one side of which were posts, which I sugared, and on the other a hedge with ivy coming into bloom, but the result was again not what I expected, two *Noctua c-nigrum* and two ♀ *Leptophyes punctatissima* at sugar, and a few *Epunda lutulenta* at the ivy. (This latter bait I would recommend to the Rev. C. R. N. Burrows, *re* his note *anteà*, vol. xiv., p. 286, which the last named species seems to prefer, and which may possibly explain why he does not get it at sugar after a certain date, dependent on the season.) Again having my suspicions with regard to flowers, I cast round with my lantern and chanced to see a moth flying in an adjoining field, where a wild plant was growing about two feet high, and, on investigating further, I found moths very plentiful, settled on the flower-heads, or buzzing from flower to flower, and among others I got *Hydroecia micacea*, two species of Xanthiids, *Noctua-c-nigrum*, *Epunda lutulenta*, *Leucania pallens*, *Peridroma suffusa*, *Phlogophora meticulosa*, *Noctua xanthographa*, *Luperina testacea*, *Anchocelis lunosa*, *Amphipyra tragopogonis*, *Triphaena comes*, *T. pronuba* (quite fresh), and *Catocala nupta*, the latter quite bearing the flower-head down. I have found that sugaring as high up as possible pays best, especially on the downs, and on one night in June last, on Brighton downs, insects came in hundreds to sugar, the next night (same conditions), in the valley, my bag amounted to three, so on the third night I returned to the downs and found insects as plentiful as on my first visit. At that time I did not suspect flowers as the reason of the second night's failure, but, in the light of my later experience, I feel pretty sure of it.—C. W. Colthrup, 127, Barry Road, East Dulwich, S.E.

Plusia gamma at sugar.—On September 9th last, at 10.30 p.m., I found two examples of this species at sugared thistle-heads which I believe is rather unusual.—Ibid.

Roosting habit of butterflies.—With reference to Mr. Lyle's note (*anteà*, vol. xiv., p. 350), and, in response to the Editor's request, I watched a number of *Pyrameis cardui* go to roost in a tree near Shorncliffe Camp, the summer before last, and made a note of it in my diary at the time. I have frequently watched *Dryas paphia* and *Limenitis sybilla* do the same thing in the New Forest during the day if the sun be obscured, and, in the late afternoon, when the sun is going down. On the evening of June 4th last, I found quite a number of *Cyaniris argiolus* roosting in a hawthorn-hedge at Shorncliffe.—IBID.

LATENESS OF THE SEASON 1902.—I send you a few notes on the backwardness of last season. The first entry in my notebook on the subject refers to *Triphaena comes*, which I breed annually for aberrations. On June 20th, the pupæ showed no signs of changing, whereas they started coming out on June 14th, in 1901, and the first emergence last year was on June 27th. At Pokesdown, on June 22nd, the larvæ of *Eugonia polychloros*, *Aglais urticae* and *Malacosoma neustria* were very small, the latter still in webs, whereas on June 14th, 1901, at the same place, I took the two former, which pupated without feeding again, and the latter was nearly full-fed. I also found a number of *Aglais urticae* larvæ, at Christchurch, as late as September 3rd last, wandering about the paths and pupating under the copings. The imago emerged September 18th. My first *Anthrocera trifolii* emerged June 14th, instead of about the first of the month. *A. stephensi* (*hippocrepidis*, Steph.) started emerging on June 15th, and the last appeared on June 30th. At Shoreham (Kent), which I visited on July 9th, not a single specimen of *A. filipendulae* was out, and some of the larvæ appeared only half fed. From a number of pupæ which I took, the first imago emerged on July 21st, and the last on August 7th, whereas, on July 17th, 1900, the insects were out in plenty at the same place, and, from pupæ I took away, my last insect emerged on July 26th, 1900. On August 18th, last year, I found the species quite fresh at both Newport and Ventnor, Isle of Wight. On September 12th last, I took a specimen of *Bryophila muralis* ab. *viridis* fresh out on a wall at Folkestone, the latest date on which I have ever taken it. On September 18th, I watched a ♀ *Pieris rapae* laying her ova on low plants at Sittingbourne, which struck me as being very late. Some of the ova which I took produced larvæ in due course. *Xylophasia polyodon*, *Triphaena comes* and *T. pronuba* were in good condition, at sugar, on September 23rd, at Folkestone; *Plusia gamma* emerging October 14th, from pupæ taken at Anerley on September 26th, and *Aeschna mixta* and *Sympetrum striolatum* still flying at Margate, on October 29th, seemed to me further evidence of a late season. On September 23rd, I took larvæ of *Cyaniris argiolus*, at Dover, very young, whereas, on September 26th, 1901, a number I took from the same place had all pupated. This affected the number of my pupæ this year very considerably, as the ivy-buds were now either too hard for them to tackle, or had burst into flower. For want of better food the larvæ, which were half-fed, attacked their more fortunate brethren, who had already assumed the pupal stage, and devoured them. It will be interesting to note if this lateness will affect the spring brood this year in a state of nature.—IBID.

LEUCOMA SALICIS FLYING AT DAWN.—Having occasion one morning last July to get out of bed at dawn, to scatter some members of the feline tribe from the vicinity of my bedroom window, I was agreeably surprised to see a number of *L. salicis* flying about, which fully compensated me for the interruption to my innocent slumbers.—IBID.

SHORT PUPAL STATE OF PHALERA BUCEPHALA.—On November 20th, 1897, I had a ♀ *Phalera bucephala* emerge. I took the full-fed larva at Ramsgate on September 17th, 1897, and it pupated on September 20th, 1897.—Ibid.

Selenia tetralunaria bred from Forres.—I have to-day (May 1st), bred a rather light-coloured ♀ of *Selenia tetralunaria*, from a larva taken in the Altyre Woods, near Forres, on August 29th last. The larva in question was beaten from larch, in company with such ordinary larch-feeders as *Macaria liturata*, *Eupithecia lariciata*, *Gonodontis bidentata* and *Ectropis* (*Tephrosia*) *bistortata*, but it is just possible that it had wandered or been blown from some neighbouring birch. Unfortunately it did not occur to me at the time to try whether it would thrive on larch; I think it has never been recorded from this, though well-known to be tolerably polyphagous on deciduous trees. What is the distribution of this species in Scotland? I believe in Dr. F. Buchanan White's time the only Scottish record was for Rannoch, and Mr. Barrett suggests (*Brit. Lep.*, vii., p. 86) that even this requires confirmation.—Louis B. Prout.

SCIENTIFIC NOTES AND OBSERVATIONS.

The Winglessness of Winter Moths.—I was greatly interested in Dr. Chapman's paper in your February issue on this subject, and as I have as yet noticed no discussion on the theory he therein propounds, I venture to send you some remarks on a few points in connection with it which have struck me. Of course I do not arrogate to myself any scientific knowledge that will enable me to argue the pros and cons with Dr. Chapman, and I have no theory of my own with which to replace his, so I propose merely to adopt the very simple role of fault-finder, and to lay stress on what appear to me, as a casual observer, to be some of the weaker points in Dr. Chapman's argument. Briefly put, the theory is that plants have little or no scent in winter by which to guide female moths to the correct foodplants for oviposition, and that, consequently, wings (which would tempt those females from the vicinity of the food on which, as larvæ, they had been reared, and near which they had eventually emerged) are dangerous, and have gradually been lost, presumably by the survival only of those females who did not use them, but remained instead close to the spot of emergence. Now, of course, the more widely applicable any theory is, the greater the probability of its correctness, and it is, consequently, a weak point, that Dr. Chapman has to start by abandoning his theory of foodplant scentlessness in the case of the Psychids, Orgyias, etc. But, although also, Dr. Chapman adduces no evidence of this alleged scentlessness in plants in winter, let us, for the moment, assume its correctness, and then see whether it is sufficiently applicable to those other species that have apterous females. There can be no doubt that all larvæ have to face the danger of want of foodplant or absence from it, either possibly by faulty oviposition on the part of the parent, or from actual exhaustion of the food itself, or from accidental removal therefrom of the larva itself, and nature meets this difficulty, it seems to me, by, in nearly all cases, allowing the use of substitute foods. If, then, those larvæ which feed on a single foodplant had apterous female parents, or, if even the larvæ of apterous females fed on a single foodplant, Dr. Chapman's theory would be on a strong basis, but, unfortunately, neither of these hypotheses holds good, and I cannot, for the moment, call to mind any of the apterous winter moths that has not several larval foodplants. Take the case of *Cheimatobia brumata*. Whether its true foodplant was scented or not in winter, such an universal feeder could hardly go wrong wherever it might happen to oviposit. Take *Nyssia lapponaria* again. Why, with the miles and miles of nothing but heather and birch in its Scotch haunts, how could the females, even with the largest and weakest of wings fail to oviposit near its proper larval food? Or take *N. zonaria*. When it emerges the sallows are in full blossom, and we all know how attractive they are to moths. Surely it is hard to credit that the scentlessness of foodplant would, in this case, account for winglessness in the females. On the other hand, if Dr. Chapman's theory be correct, does it not seem that nature has paid an extravagant price for the object which she presumes she has gained by depriving certain insects of wing power? With *Cheimatobia* it is true, there is the compensation of increased pedal activity; but with *Nyssia* there is no such compensation and, as a result, apparently, both *N. zonaria* and *N. lapponaria* are excessively local, though, on the other hand, *Phigalia pedaria* (*pilosaria*) and *N. hispidaria* seem less affected and are common in most places. That the subject is full of interest and will bear deep investigation is evident, though I doubt if Dr. Chapman has yet hit on the satisfactory explanation.—Percy C. Reid, F.E.S., Feering Bury, Kelvedon. *March 24th*, 1903. [This note being submitted to Dr. Chapman he sends the following memorandum in reply:—" There is perhaps one point in Mr. Reid's comments on my suggested explanation of why winter moths have apterous females that ought to be referred to by me, by way of reply, since it may have resulted from some obscurity in my original statements. I had often, of course, wondered why these moths were apterous, and felt dissatisfied with any explanation I met with, but had seen no way of investigating the subject and for all practical purposes the problem might not have existed so far as I was concerned. It was only after having familiarised myself with the Psychids and Orgyias, and concluded that there could be little, if any, doubt that apterousness with them was a provision to prevent any mistake as to where the eggs should be laid, that I thought some similar principle might be found to explain the apterousness of winter moths, and began to search for some way in which it would apply, and imagined that the scentlessness of plants, when enjoying their winter sleep, supplied the conditions that made the same explanation applicable. It seems, therefore, desirable to point out that Mr. Reid is in error in saying that I abandon my theory in the case of Psychids and Orgyias, since, on the contrary, what I do, is to bring the winter moths (*mutatis mutandis*) within the Psychid-Orgyia explanation. Mr. Reid's other criticisms do not seem of much moment, and, if nothing more damaging can be advanced, make me believe that my view of the matter is on stronger ground than I had supposed. I cannot see how a larva having one or several foodplants affects the matter. From the point of view of the ovipositing moth it only makes the foodplant a little more or less abundant. Or, again, is sallow "the" foodplant of *Nyssia zonaria*? Why should this price paid by Nature to secure the advantage of having the proper position of the eggs made sure be regarded as extravagant, since it is the one apparently which most certainly attains the object, and is most easily adopted? The object in view is one for which no price can be too extravagant if it be necessary to attain it. It is certain that the moth has no other object in life of equal importance, and, therefore, Mr. Reid must suppose this extravagant price to have been paid for something less valuable. Mr. Reid's note induces me to mention a point that occurred to me before, but which I did not go into, as it is purely theoretical at present, but it has practical bearings in view of such points as Mr. Reid has raised. The point is that it would be almost impossible for an apterous female to regain her wings, should she want them, yet it is quite possible for the descendants of such a species to have no necessity for such apterousness. *Nyssia lapponaria*, according to Mr. Reid's view of its habits, might very well be such a species. Whether it be so or not I know too little of its habits to guess. Could an apterous female regain her wings? She could not do so by natural selection gradually increasing their size, as they would be of no use for flight till fully re-developed, and, in the interval, natural selection would have nothing to act on. They might, where their rudiments still exist, under conceivable circumstances, be developed into special organs of sensation, or even into, say, swimming paddles, but not into wings. They might be regained *per saltum*, by inheritance from the male, but this would be an occurrence of the greatest possible rarity, and very unlikely to occur at a moment when it could be utilised."—Ed.]

Pupal ecdysis of Abraxas grossulariata.—On April 17th, 1903, at 4.5 p.m., I observed a white substance protruding from the head of an *A. grosssulariata* larva which had ensconced itself three or four days previously in a silken hammock in the upper left-hand corner of a breeding-box. The box being four feet above the level of my eye, I at first concluded that the cocoon of a parasitic dipterous larva was extruding itself, but the next moment, remembering that the *grossulariata* larva resulted from the egg of a female reared in confinement, I realised the impossibility of my first theory, and, procuring a pair of steps I perched myself on the top of them and watched the lepidopterous larva shuffle off its larval skin. This process it completed at 4.22 p.m., exactly 17 minutes after I began my observations. Probably about a quarter of the transformation was accomplished when I first noticed what was going on, and I think we may reasonably infer that the pupal ecdysis in this species is accomplished in from 20 to 25 minutes. The breaking of the larval skin seemed very rapid as I watched it, but there was no wriggling till 4.20 p.m., when the larva (or rather pupa), turning its tail away from me, wriggled violently, but ineffectually, to free itself entirely from the larval skin. This, however, it succeeded in doing two minutes later by the help of another wriggle possibly rather more violent. The remains of the larval skin were not altogether thrust out of the silken web, as often happens in this species, but remained close to the anus of the pupa. The colour of the pupa was now a dull white with hardly any trace of coloured bands. How soon it assumed the usual coloration of the pupal stage in this species I am not able to say as I had not the leisure to observe its development, but the darker bands were plainly visible at half-past ten the same night.—(Rev.) G. H. Raynor, M.A., **Hazeleigh Rectory, Maldon, Essex.** *April 20th*, **1903.**

Migration of Anosia archippus.—While looking through my journals for notes *re* the occurrence of *Hyles euphorbiae* in the Mediterranean district, I came across the following which was written on November 8th, 1897, while we were steaming through the Grecian Archipelago. I intended to send a note of it to one of the entomological magazines at the time, but did not do so. The entry reads "*Anosia plexippus.*—One of these butterflies flapped slowly over the ship not more than ten yards above my head, and I had a good view of it, and feel confident it was this species, with which I am well acquainted. The day was bright, hot, and calm. When I was in the Pacific, between 1881-4, I often saw these butterflies passing over, or flying about, the ship when we were miles from any land, so I do not think it likely I was mistaken. But where could this one have come from, the east or west?"—**Gervase F. Mathew**, R.N. F.E.S., (Paymaster-in-Chief), Dovercourt, Essex. *March 16th*, 1903.

Probable new British Nemotois.—Two specimens of this insect were deposited last year in the British Museum, and, up to the present time, it has not been ascertained to which species to allocate them. This year both sexes have occurred, the male (apparently) having long antennæ and the female short. The short-horned specimens are much duller than the long-horned. These latter are of a rich bronze, no marking of any sort, and greatly resemble *N. cupriacellus*, but rather smaller. They frequent the blossoms of *Cardamine pratensis*, but cease flying at mid-day. It is a small insect, and frequents marshy ground, and is not likely to have been blown over.—**B. Piffard**, Ivy Cottage, Brockenhurst. *May 19th*, 1903. [Our correspondent suggests a name for this insect, which we have suppressed, on the grounds that we have in the Walsingham collection the finest collection of Micro-Lepidoptera extant, that if the insect were submitted to Lord Walsingham for comparison with the continental species of the genus, an expert and authoritative opinion could be at once obtained, and a technical and exact comparison made with its nearest allies were it considered to be distinct, or, if an already described species, its name could be readily determined. We do not see that any good purpose is served by depositing Micro-Lepidoptera at the British Museum, where it is a matter of common complaint that there is no micro-lepidopterist. —Ed.].

CURRENT NOTES.

We wish to draw the attention of our readers to the fact that the Rev. G. Wheeler, M.A., has in press a new book entitled "The Butterflies of Switzerland and the Alps of Central Europe." As we have been through the MSS. of the work we can say that it will be of the highest value not only to collectors of Continental butterflies, but to all those who collect British butterflies, giving a great many detailed facts about the species in which they are more particularly interested. The details of Variation and Distribution are particularly important, and those lepidopterists, to whom Kane's book has long been a treasured friend, will find in this more information, more detail, and endlessly more localities than were at the disposal of the author of the earlier volume. As Mr. Wheeler has largely been influenced by us in its publication, and our advice has been based on our opinion of the great value of the book, we trust that everyone interested in British and Continental butterflies will support so excellent and useful a venture. The price of 4s. 3d. to subscribers cannot be considered prohibitive.

We are in receipt of *A List of Lepidoptera found in the counties of Cheshire, Flintshire, Denbighshire, Carnarvonshire* and *Anglesea*,* by George O. Day, F.E.S., who has been aided in his work by Messrs. Arkle, Dobie, and Newstead. There can be no doubt that this is one of the best local lists published, and will rank with those of Yorkshire (Porritt), Lancashire (Ellis), Northumberland and Durham (Robson), Suffolk (Bloomfield), Sussex (Jenner), Gloucester and Somerset (Hudd), &c., many of which, however, now want bringing up-to-date, not by supplements, but by the publication of a new edition. It runs out to 120 pages, has a good specific index, is exceedingly well printed, includes all the lepidoptera except the superfamilies formerly included as Tineina, and appears to be carefully and thoroughly well done. We have no doubt that it will be of the greatest service to us in our own work, and many other lepidopterists will no doubt thank Mr. Day and his helpers for their excellent work.

Mr. Pierce has a paper in the April number of the *Entomologist* on the genitalia in the Lithosiids. He finds that those of *Lithosia complana* and *L.* var. *sericea* are not distinguishable, and is inclined to consider these insects specifically distinct. He leaves, however, the question of the specific value of *sericea* much as it has been for half a century. It should be in the power of the active Lancashire and Cheshire lepidopterists to work out a simple problem of comparison; they can get ova of both forms for comparison (and for photographing), they should be able to get larvæ in sufficient numbers to see whether Buckler's differences are real or only within the limits of the larval variation of one species; the pupæ, too, should be submitted to Dr. Chapman. It appears to us that Mr. Pierce's statement that "he does not think that the variety theory has at all been proved," is beside the mark. It is surely for those who set up a new species to prove its specific distinctness by a diagnosis that separates it satisfactorily from all other species, and that is just at present what we aver has not been clearly done.

Mr. J. Edwards notes (*Ent. Mo. Mag.*, April) that he has examined the genitalia of one of the *Hesperia alveus*, reported some time since as having been captured in Norfolk many years previous to their having been recorded, and finds it to be really this species. He thinks that the butterfly is to be regarded as a survival of the ancient fauna of Central Norfolk and that there is no need to attempt to account for its occurrence by immigration or accidental introduction along with plants. This leaves us only two other views, *viz.*, that the captor mixed unwittingly his Continental and British captures, or that it is a native of Cawston. If it be a native of Cawston why was the species not earlier detected, and why has the species not been since found there? Like several other common butterflies there is no reason whatever why this species should not occur in Britain, the only fact that we know at present about the matter is that it does not appear to do so.

Recently Dr. Dyar criticised (*Can. Ent.*) some of our facts *re* the

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* Published at The Grosvenor Museum, Chester. Price 2s. 6d.

Attacid and Lachneid larval structures published in *British Lepidoptera*, vol. iii. To this criticism Mr. Bacot sent a reply (*loc. cit.*, xxxv., pp. 44-47) maintaining the facts and offering to send Dr. Dyar the material in hand for examination. In the current no. (April) of the same magazine (pp. 88-89), after examination of the material sent by Mr. Bacot, Dr. Dyar acknowledges Mr. Bacot's facts, and is "very willing to acknowledge himself corrected," and he points out that the characters exhibited by the larva of *Aglia tau* make the divisions of his synoptic table (Tutt, *Brit. Lep.*, iii., p. 272) stronger and sharper than before, allying *Aglia* more strongly than ever with *Attacus* and *Saturnia*. This international method of work is the only true means of obtaining uniform conclusions in our results, and of preventing the apparently widely differing views sometimes held by equally good workers on the same points and apparently on the same facts.

The Société Entomologique de Namur is publishing a *Catalogue des Lépidoptères de Belgique*, for which Mr. L. J. Lambillion and Baron de Crombrugghe de Picquendaele will be responsible. The catalogue will contain information on the families, genera and species, will indicate the times of appearance, and their principal habitat, as well as notes on the times when the larvæ are to be found, their food-plants, &c. The dozen parts (16 pages per part) are to cost five francs, which should be sent to Mr. L. Naniot, Rue de Dave, Jambes, Belgium.

We have already made an appeal to our readers for descriptions of ova, larvæ (in their various stadia), and pupæ of European butterflies, for publication. To anyone who may be inclined to help we wish to state that a large quantity of material may be obtained from Mr. A. Voelschow, Schwerin, Mecklenburg. He offers, for example, eggs of *Melitaea athalia* and *M. dictynna*, two insects which are by many doubted as distinct, a difficulty which could perhaps be settled by comparison; ova of *Brenthis selene*, *B. euphrosyne* and *B. arsilache*; of *Epinephele lycaon* and *E. jurtina*; of *Coenonympha iphis* and *C. tiphon*; of *Chrysophanus virgaureae* and *C. phlaeas*, &c. Which of the members of the South London Entomological Society, who photograph ova so excellently, will give us photographs and detailed descriptions of such ova as are available?

Mr. T. A. Lofthouse publishes in *The Proceedings of the Cleveland Naturalist's Field Club*, a list of "Cleveland Lepidoptera in 1901," with many additions to the local fauna, whilst Mr. M. L. Thompson gives a list of "The Coleoptera observed in Cleveland" for the same year.

We have received an excellent paper, *The Net-winged Midges (Blepharoceridae) of North America*,* by Mr. Vernon L. Kellogg. To those who are acquainted with the author's work there is no need to say that it is quite up to his usual excellent standard, with good descriptions, details of the immature stages so far as they are known, and distribution notes. There are many points touched upon that make the study of first importance to European, as well as to American, lepidopterists. As a preliminary to a future monograph of the Blepharocerids, as pointing out the work already done, and, still more important, what yet remains to be done, the author is to be congratulated on his present study. The plates appear to us to be excellent.

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* Published at the Stanford University, California.

In order to continue his experiments on hybrid Malacosomas, Mr. Bacot is sadly in need of ova, larvæ, pupæ or fertile females of *Malacosoma franconica*. The Editor will be glad to give a fair price for such, and trusts that some one of our Continental readers will be able to oblige him with the species.

As a point of showing how things get altered in one's memory as time goes on, we would point out that Mr. Day, in his new *List of Lepidoptera found in Cheshire*, &c., p. 11, notes of *Hyles euphorbiae*: "There are no recent records. The following extract is from Ellis's List, p. 14—'A specimen now in the cabinet of Mr. C. G. Gregson, captured in an outhouse at Buxton, nr. Birkenhead, by Mr. Morgan; two larvæ found on *Euphorbia paralias*, between Little Brighton and Hightown, by C. G. Gregson.'" Gregson was undoubtedly a good lepidopterist, but his desire to go one better than all his contemporaries led him to make many curious and contradictory statements about things that he did take and others that he thought he took. His first record regarding these larvæ (*Zool.*, p. 2298) was that he took "a fullfed larva" at Formby "on grass," and in response to a jog by the Editor, he later added that the grass was "near *Euphorbia*;" by the time that Ellis's list was printed "two" had been found "on *Euphorbia*," and one suspects that, like the larvæ of *Celerio gallii* that were found in 1889 and proved to be young *Sesia stellatarum* larvæ, those of *H. euphorbiae* were probably those of *Theretra porcellus* or *Eumorpha elpenor*, which Gregson hoped would prove to be *H. euphorbiae* in the days before he knew "one from t'other or t'other from which," and when, possibly, someone having recorded a recent capture of the species, it was necessary to be up-to-date.

Mr. G. C. Champion being responsible for the list of coleoptera in the Victorian history of the county of Surrey, this list is, as was to be expected, a very long, complete and accurate one. He points out that Surrey, perhaps, has been more worked for coleoptera than most other counties. He groups the localities under four heads:—(1) The line of the North Downs between Farnham and Limpsfield; (2) north of the North Downs; (3) south of the North Downs; (4) South London and the various towns that have produced cosmopolitan species. He states that Mr. John Linell's Reigate lists of coleoptera, and a MS. list of the coleoptera of Chiddingfold, lent by Mr. Horace Donisthorpe, have been of great service to him in compiling this list. The species which have only been recorded from Surrey in this country are marked with an *. These are ten in number, *viz.*, *Homalota rufotestacea*, Kr. (Mickleham); *H. hypogaea*, Rey. (Caterham); *Borboropora kraatzi*, Fuss. (Mickleham); *Acylophorus glabricollis*, Boisd. (Barnes Common, Merton, and Richmond); *Quedius kraatzi*, Bris. (Chiddingfold); *Corticaria obscura*, Bris. (Richmond Park and Esher); *Micrambe abietis*, Pk. (Mickleham and Guildford); *Hypophloeus linearis*, F. (Oxshott and Woking); *Salpingus mutilatus*, Beck. (Caterham, Gomshall and Mickleham); *Cryphalus granulatus*, Ratz. (Surbiton). We have added the localities to these species, as there are unfortunately no notes or localities to any of the species in the list, but this, we believe, as before pointed out when reviewing the coleoptera of the Victorian history of Cumberland (*Ent. Record*, 1902, p. 185), is the fault of the publishers. Altogether, some 2319 species are recorded from Surrey.

We would recommend our students of the British Odonata to obtain from the library of one of the Societies to which they belong (or elsewhere) Needham's "Genealogic study of dragonfly wing venation," published in the *Proceedings of the United States National Museum,** xxvi., pp. 703-764, as it is a paper worthy of the most serious study. We have heard collectors complain that there is so very little to do in collecting and studying the British dragonflies (the total number of something just over three dozen being a little more than half the number of British butterflies and only about one-sixtieth of the British moths) and sighing for more worlds to conquer, that we have long expected some one of our Britishers would have given us a study on the lines that Mr. Needham has apparently worked to such good purpose; now that we have his results some suggestions as to the more difficult points in the classification of the Odonata should be forthcoming.

Lameere publishes (*Ann. de la Soc. Ent. Belg.*, xlvii., pp. 155 *et seq.*) a fresh critical study entitled "Nouvelles notes pour la classification des Coleoptères." Our British coleopterists appear just at present to leave all consideration of the classification of the order to their continental confrères, Sharp being the last, we believe, who has dealt with the subject in this country. Where are our thinking coleopterists? Cannot one of them give us a constructive critique of Lameere's views?

We are in receipt of Part II of *A Catalogue of the Lepidoptera of Northumberland and Durham*, by John E. Robson, F.E.S. This second part includes the superfamily Geometrides, and follows the same excellent lines as Part I. The author's intimate knowledge of the lepidopterists of these counties for the last 60 years or more, his close friendship with Sang and Gardner, and his wider experience as editor of *The Young Naturalist* for many years, have placed him in an exceptionally strong position for doing the work. He has followed Stainton in his arrangement, an arrangement which, until we have a really authoritative British Catalogue, appears to be as good as any other, although we have to confess that we are extremely puzzled by the separation of *Acidalia virgularia* and *A. incanata* (unless the latter be the insect we have known as *promutata* and *marginepunctata*), and by the inclusion of *Acidalia osseata*, which one supposes must be the insect so long known as *interjectaria*. In cases like this, one would have preferred that the synonymy should have been put right, so that there should have been no doubt as to the species. On the other hand, we are glad to see that Mr. Robson stands out for the distinctness of *Eupithecia innotata* and *E. fraxinata*, so dissimilar in their larval habits, yet so alike in the appearance of the imagines. When one considers what labour is entailed in the compilation of such a list, of what value it is to outsiders, and how little glory it can possibly bring the author, one is filled with contempt for those collectors to whom Mr. Robson says that he applied for, but who refused him, information with regard to some of their reported captures. That such individuals are still in our ranks is rather a matter for sorrow than anger; aberrations of this class are distinctly rare, we should like to have the pleasure of naming them. Mr. Robson asks for lists of the Pyralids, Crambids, Tortricids, Pterophorids and Tineids from any and every district within the boundaries of Northumberland and Durham. To those who cannot name the smaller fry, Mr. Robson also appeals, stating that if they will send him their pinned captures, he himself will name them. We wish the author all success in the completion of his task.

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* *Published* at the Government Printing Office, Washington, U.S.A.

The last meeting of the Entomological Club was held on May 5th, 1903, at 4, Lingard's Road, Lewisham, when Mr. Robert Adkin was the host. Tea was served by Mrs. Adkin at 6.30 p.m., and by 8 o'clock a number of well-known entomologists were present. Among those who sat down to supper we noticed Professor Armstrong, Messrs. B. W. Adkin, H. Rowland-Brown, J. Collin, W. L. Distant, H. St. J. K. Donisthorpe, T. W. Hall, J. Jäger, A. H. Jones, R. McLachlan, G. T. Porritt, F. Smith, J. W. Tutt, G. H. Verrall, &c. A most enjoyable evening was spent, most of the guests leaving between 11 p.m. and 11.30 p.m.

At the Conversazione of the Royal Society held on May 15th last the only entomological exhibit was a case of butterflies to illustrate mimicry, by Mr. S. A. Neave, and appearing in the *Catalogue* as "Mimicry in Butterflies from British East Africa and Uganda." It consisted of a selection from a number of butterflies collected by Mr. C. A. Wiggins, which were arranged as examples of several mimetic associations, and also to some extent to illustrate the transition between eastern and western forms. The case exhibited by Dr. H. Gadow, F.R.S., and noted as "Development and variation of the Colour-Pattern in Mexican species of Lizards (*Cnemidophorus* and *Ameiva*)," was of much interest to entomologists as dealing with a parallel series of phenomena met with in insects in connection with protective resemblance. The exhibit was described as follows:—"Examples of Orthogenetic variation in adaptation to surroundings"—

Series 1. *Cnemidophorus deppei*. Sandy localities with sparse tufts of short grass. Stripes sharply marked, with tendency to increase from 9 to 11.

Series 2. *C. guttatus*, striped race. From same locality, but less scanty vegetation. Mode of increase of the number of white stripes, from 6 to 11, accompanied by partial reduction.

Series 3. *C. guttatus*, spotted race. Living in tropical forests with dense undergrowth. The stripes are broken up into series of pale spots.

Series 4. *C. mexicanus*. Living on the open plateau, with scattered spiny shrubs and hedges. The pattern of longitudinal stripes changes in the adult to one with numerous cross-bars.

Series 5. *C. bocourti*. Structurally a very slight variety of *C. mexicanus*, living in the same districts, but frequenting denser vegetation. The lines are broken up into spots.

Series 6. *Ameira undulata*. Open patches in tropical forest. Longitudinal stripes vanishing with age, while new spots appear between the outer stripes, become confluent and form a new white band, most conspicuous in old males.

We noticed the following entomologists present at the meeting:—Professors T. Hudson Beare and E. B. Poulton, Dr. T. A. Chapman, Messrs. G. C. Champion, A. J. Chitty, Horace St. J. K. Donisthorpe, W. J. Kaye, R. McLachlan, H. Rowland-Brown, Edward Saunders, and C. O. Waterhouse.

VARIATION.

PIERIS BRASSICÆ AB.—I had the good fortune, some years ago, to breed a male of the above species with a small black (linear in my case) spot developed on the upper side of both forewings. Mr. Tutt (*British Butterflies*, p. 229) mentions one other similar case as having been recorded.—H. Mousley, F.E.S., Burnfoot, Buxton. [M. Jachontov (*Rev. Russ. Ent.*, iii., p. 38) describes a new aberration of *Pieris brassicae*—ab. *nigronotata*—which occurs with the type, but in the spring brood only, about Nijni Novgorod. He diagnoses it as "alis anterioribus supra in disco puncto nigro notatis."—Ed.]

Epinephele janira ab. addenda, n. ab.—For the rare form of the above species, in which the number of the spots on the upper- and underside of the forewings exceed the two ocellated ones, I propose the above varietal name. In August, 1901, I bred a female with the underside of the left forewing normal, whilst that of the right had four spots developed, the two ocellated ones being very small indeed, and the remaining two merely dots and blind. After breeding this aberration I examined the undersides of some that I had taken in 1895 (and set to show the uppersides), and amongst them I found a fine example with four spots on each wing corresponding exactly with the upperside of the ab. *excessa* of *tithonus* figured in Barrett's *Brit. Butts.*, pl. xxxiv., fig. 1.—Ibid.

Erebia æthiops ab. stricta, n. ab., and ab. pallidior, n. ab.—Referring to my article on the above species in the *Ent. Record*, 1902, pp. 18-20, I find I omitted the varietal names of ab. *stricta* which I had given to the underside aberration of the male described on line 21, page 20, in which the bands on the fore- and hindwings are almost obsolete, and the spots very small indeed; and also ab. *pallidior* for the male with pale grey underside, and bands lighter (not "higher" as in article) than in the type, and more resembling those of the females. —Ibid.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Eggs of Lepidoptera.—*Calamia lutosa* (laid October 18th, 1902; examined by lamp-light December 15th, 1902).—A single egg is laid near the tip of a blade of ribbon-grass, within the curled portion that makes the spiky termination of the leaf; the egg is attached to the leaf by some gummy-looking cement. A row of seven eggs are laid on another leaf, which has, apparently, become uncurled since laying; most of these touch each other, and are laid with the micropylar axis set obliquely to the plane of leaf; the remainder are irregular in position. The colour is of a pale dull creamy tint. About 1mm. in diameter, and between ·8mm. and ·9mm. in height, the shape roughly resembling that of a Tangerine orange, but much misshapen and faceted, as though laid soft, and ready to take the shape of any space into which it is forced. The cell-pattern surface network forms slight longitudinal ribbing on sides, owing to the strengthening of cell walls on two sides and the weakening of the remaining ones. The pattern is reduced on base to a slight denting of the surface; on the top the dents are somewhat smaller, and more sharply cut at sides. It is not possible to get a clear view of the micropyle itself, but the cells appear to be reduced in size, and there is a slight depression.—A. W. Bacot, F.E.S., 154, Lower Clapton Road, N.E.

Erratum.—Page 121, lines 39 and 49, for "Mr. St. Quentin" read "Mr. St. *Quintin.*"

Subscriptions for Vol. XV are now over due.

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EXCHANGE BASKETS.—March 14th, 1903, No. 1 basket.—Major Robertson, Messrs. Fox, Lofthouse, Studd, Riding, Day, Bower, Horne, Bowles, Mera. No. 2 basket will be retained till end of June. [Members who wish to be missed must write to the name preceding their own on list, not to the Secretary]. The names of one or two new candidates for admission would be welcomed and room made as opportunity offered.

Duplicates.—Geryon, Polychloros*, Fimbria, Filipendulæ, Trifolii, Galathea, Monacha, &c. *Desiderata.*—Larvæ and Pupæ of many species.—*G. T. Lyle, Brockley Road, Brockenhurst.*

Duplicates.—Cassiope, Io, Rubi, Carpinata, Polycommata, Suspecta, Saucia, Ericellus, Buoliana, Sulphurella. *Desiderata.*—Pruni, Porcellus, Bicolorana, Deplana, Rubricollis, Bifida, Fagi, Putrescens, Straminea, Maritima, Brevilinea, Petasitis, Cespitis, Caliginosa, Obscura, Simulans, Interjecta, Orbona=Subsequa, Opima, Contigua, Semibrunnea, Socia, Umbra, and many others.—*H. A. Beadle, 6, Station Street, Keswick.*

Duplicates.—W-album*, T. quercus*, Alveolus*, Lineola, Illustraria*, Gilvago*, Miniosa*, and many others. *Desiderata.*—Ova or larvæ of Designata (Propugnata) and Ribesiaria (Prunata).—*Rev. G. H. Raynor, Hazeleigh Rectory, Maldon, Essex.*

Duplicates.—Z. annulata, *vars.* obsoleta and bi-obsoleta, and intermediates. *Desiderata.*—Offers.—*W. S. Riding, Buckerell Lodge, near Honiton, E. Devon.*

Duplicates.—Pulveraria*, Advenaria*, Repandata (dark)*, Templi (fair), Hastata (fine), Cæsiata, Inornata and larvæ*, Chrysorrhœa*, Viminalis *var.* obscura*, Palpina*, Heparata, Illustraria*, Cinxia*, Albicillata, Ambigua (fair), Ribesiaria(=Prunata), five Fluctuosa (fair), Actæon, Menthastri* *vars.* ochracea, carbonica, Lubricipeda* *var.* radiata (all forms, including black bordered). *Desiderata.*—Iris, Holosericata, Irriguata, Constrictaria, Valerianata, Quadrifasciaria, Dodonæa, Putrescens, Caliginosa, Semibrunnea, &c.—*J. Harrison, 7, Gawber Road, Barnsley.*

Desiderata.—During the season—Ova, larvæ, pupæ, and living imagines of many species. Good exchange.—*H. W. Head, Scarborough.*

WANTED COLEOPHORIDS.—As I wish to breed and record the life-history of all the species of *Coleophora*, I should be pleased to receive any cases and living larvæ which entomologists may meet with. I will do what I can in return.—*Hy. J. Turner, 13, Drakefell Road, St. Catherine's Park, Hatcham, S.E.*

WANTED (during spring and summer).—Living *wild* ♀s Atalanta, Cardui, Io, Sinapis, Cardamines, C-album, Egeria, Lucina, Rubiginea, Semibrunnea, Petrificata, Miata, Psittacata and Derivata, also larvæ of Repandata and Aurinia from all British localities (except Carlisle and Westmeath), especially Scotch and Welsh, Castrensis, Quercifolia, Interjecta, Xerampelina, Diffinis, Festucæ. Liberal exchange.—*L. W. Newman, Bexley, Kent.*

WANTED (to figure).—Examples of the following larvæ, fullfed: Antiopa, Lathonia, Daplidice, Edusa, Hyale, Livornica, Pinastri, Celerio, Gallii, Euphorbiæ. Will any lepidopterist who collects abroad kindly remember my wants when opportunity occurs of obtaining any of them?—*J. C. Dollman, Hove House, Newton Grove, Bedford Park, W.*

EXCHANGE.—I am desirous of obtaining butterflies from the Malayan Archipelago and the Pacific Islands. For such I offer perfect diurnals from North and South America: North American Coleoptera.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Wanted.—Erycinidæ of the world. Offer for same Diurni from United States, northern South America and Central America, also North American birds' eggs and American-Indian relics.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Hertfordshire County Museum, St. Albans.—A collection of British Lepidoptera is being formed. I shall be thankful if collectors will send me any duplicate specimens they may have to spare. Hertfordshire insects will be specially welcome.—*A. E. Gibbs, Hon. Curator, Kitchener's Meads, St. Albans.*

Albert Memorial Museum, Exeter.—Collectors of British Lepidoptera are asked to kindly give any spare Devonshire duplicates they may have, to assist in the formation of a local collection. Duplicates in other Orders also desired.—*F. R. Rowley, Curator.*

Parasitical Diptera wanted.—Will lepidopterists who may breed any dipterous parasites from larvæ or pupæ kindly forward such as they do not require to me? If so I shall be greatly obliged.—*C. J. Wainwright, 2, Handsworth Wood Road, Handsworth, Staffs.*

Change of Address.—*H. D. Stockwell, 56, Elms Vale Road, Dover. Douglas A. Onslow, 34, Werter Road, Putney, S.W. E. G. Broome, 3, Prince Alfred Terrace, Ireland Island, Bermuda. H. W. Andrews, Shirley, Avenue Road, Welling.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W. 8 p.m.—Meetings: June 3rd; October 7th, 21st; November 4th, 18th; December 2nd. Annual Meeting, January 20th, 1904.

The City of London Entomological and Natural History Society. — London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m. Members are particularly requested to bring varieties and aberrations for exhibition. Non-members cordially invited. Exhibits invited at each meeting, especially those illustrative of the discussion, &c. Members wishing to contribute "Communications" are asked to inform one of the Secretaries.

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m.—Hon. Sec., G. E. Shaw, 22, Baythorne Street, Bow, E. Monday, June 8th, "Trees," Miss K. M. Hall. Monday, July 6th, probably a paper on "Flies," F. Morice. No meeting in August. Excursions.—June 14th, Leatherhead for Headley and Box Hill; London Bridge (L.B. & S.C.R.), 9.25 a.m.; return, 2s. June 20th, Esher to Oxshott; Waterloo, 2.29 p.m.; return, 1s. 10d. June 28th, Sevenoaks for Shoreham; Cannon Street, 9.15 a.m.; return, 1s. 9d. July 12th, Merstham; Cannon Street, 10.25 a.m.; return, 2s. July 18th, Bromley for Hayes and Keston; Holborn Viaduct, 2.37 p.m.; return, 1s. July 26th, Woking to Windsor; Waterloo, 9.55 a.m.; return, 2s. 6d.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. June 6th, Field Meeting at Horsley, S.W.R.; leaders, W. J. Lucas, B.A., and R. South, F.E.S. June 11th, Exhibits and Discussions. June 25th, Report of Horsley Field Meeting, by W. J. Lucas, B.A., and R. South, F.E.S. June 27th, Field Meeting at Limpsfield, S.E.R.; leader, R. Adkin, F.E.S.

North London Natural History Society, Sigdon Road Board School, Dalston Lane, N.E. (close to Hackney Downs Stations, G.E.R.).—Meetings second and fourth Tuesdays in each month, at 7.45 p.m.

Carlisle Entomological and Natural History Society.—Meetings held at the Subscription Library, Tullie House, Carlisle. Visitors cordially invited.—Hon. Sec., F. H. Day, 17, Thirlmere Street, Carlisle.

South Eastern Union of Scientific Societies.—The **8th Annual Congress** will be held at **Dover,** June 11th, 12th, and 13th, 1903. Natural History Exhibits for the Congress Exhibition desired. Address Mr. E. W. Swanton, Brockton, Haslemere. Members of Natural History Societies who desire to attend (and their friends) should send the fee, 2s. 6d., to the Secretary, 33, Upper Grosvenor Road, Tunbridge Wells. This entitles them to the Transactions for the current year.

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Mellinia gilvago comes freely to light in August (at Cambridge, Reading, &c.), and is sometimes taken from the lamps in and near towns in large numbers, probably only where avenues of elms exist in the suburbs of the towns.

Towards the end of August, at about 6 p.m., search should be made at the base of ash-trees, and on the *débris* around, for freshly-emerged imagines of *Cirrhœdia xerampelina*.

In the Church Stretton district, imagines of *Cirrhœdia xerampelina* are to be obtained at the foot of some large ash-trees, clinging to blades of grass, at the end of August and early in September, the trunks rarely giving a single specimen.

In the middle of August the imagines of *Lithomia solidaginis* occur freely on a piece of boggy heath near Wilsden. At rest this species has a most remarkable resemblance to the excrement of grouse—the male particularly so. It folds its wings round its body, clasps a stone with its legs and raises its body to an angle of about 30°, its markings, colour, shape, and mode of attachment make the imitation almost perfect.

Lithomia solidaginis abounds in Cannock Chase in late August. The imagines are very easy to find, as they sit on the birch-tree trunks during the daytime, principally with their heads thrust into some crevice in the bark, so that their bodies stand out at right angles to the trunks of the trees, rendering them conspicuous. As many as 150 have been taken on one day, the greatest number on a single tree being seven.

The larvæ of *Cucullia lychnitis* will eat *Scrophularia aquatica* as well as *Verbascum*, preferring the buds and blossoms.

Everyone who has the opportunity should devote some days during the first fortnight of August to searching for larvæ of *Cucullia gnaphalii* in the Kent woods. It is easy to make a small, light beating tray of black calico, sewn to a frame of stout iron wire, and, having found an opening in the woods where the golden-rod is plentiful, each plant should be beaten gently with a light stick into the tray, which should be held against the plant-stalk, low down near the ground. Plenty of larvæ of *C. asteris* will be obtained, and of Eupitheciids too, but the larva of *C. gnaphalii* is unmistakable with its dull green colouring and purple dorsal stripe. An average of one to a hard day's work is good (P. C. Reid).

The imagines of *Stilbia anomala* are best taken on Cannock Chase in early August, beginning to make their appearance about 7 p.m., and continuing to fly till about 8.30 p.m. The insect is very conspicuous on the wing, the ample lower wings making it appear almost white when flying; it gets up suddenly out of the heather and short grass, flies ten or twelve yards, and then drops down again, folding its dark upper wings closely over the lower ones, and thus, in a moment, becoming almost invisible, so that, unless one marks very exactly the spot where it falls, it is impossible to detect it. Frequently, *however, it will fly up again almost directly, when, of course, it may be "snapped" with the net (Thornewill).*

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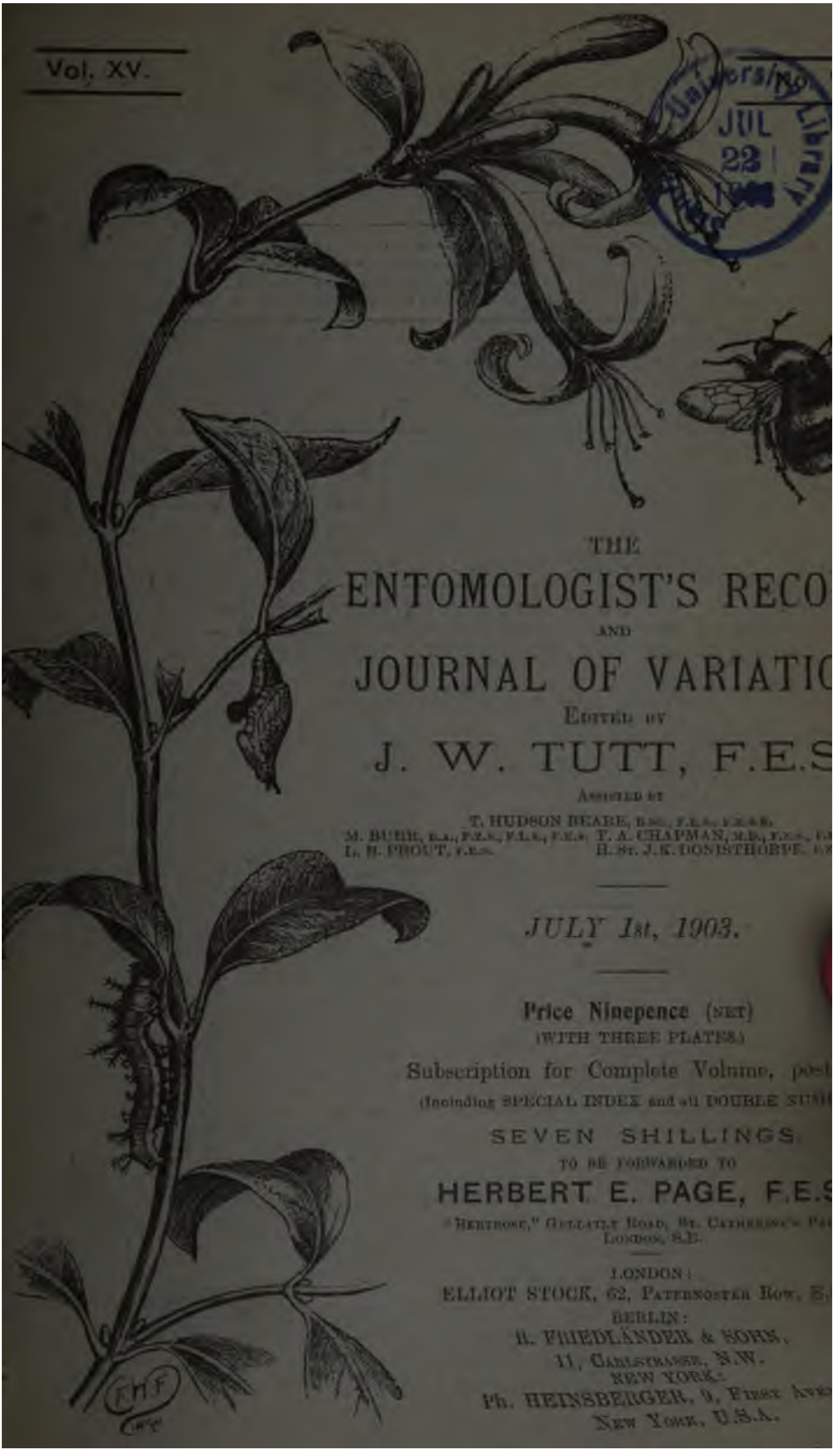

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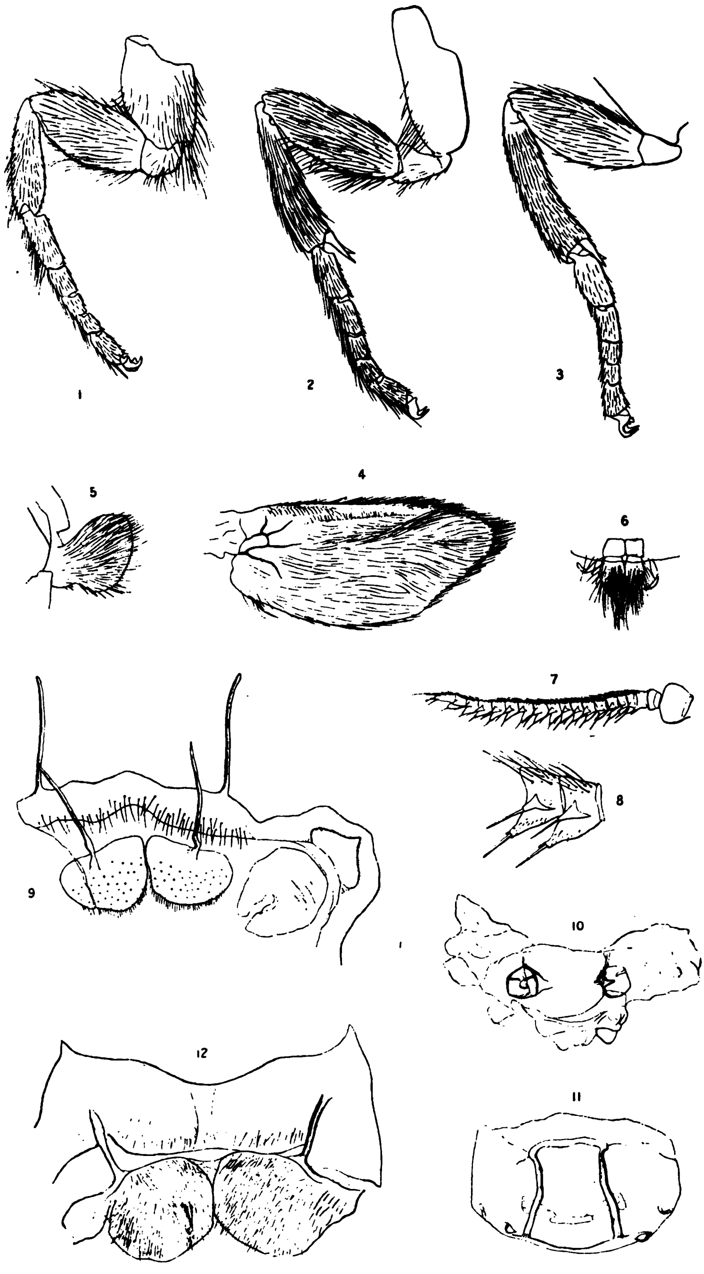

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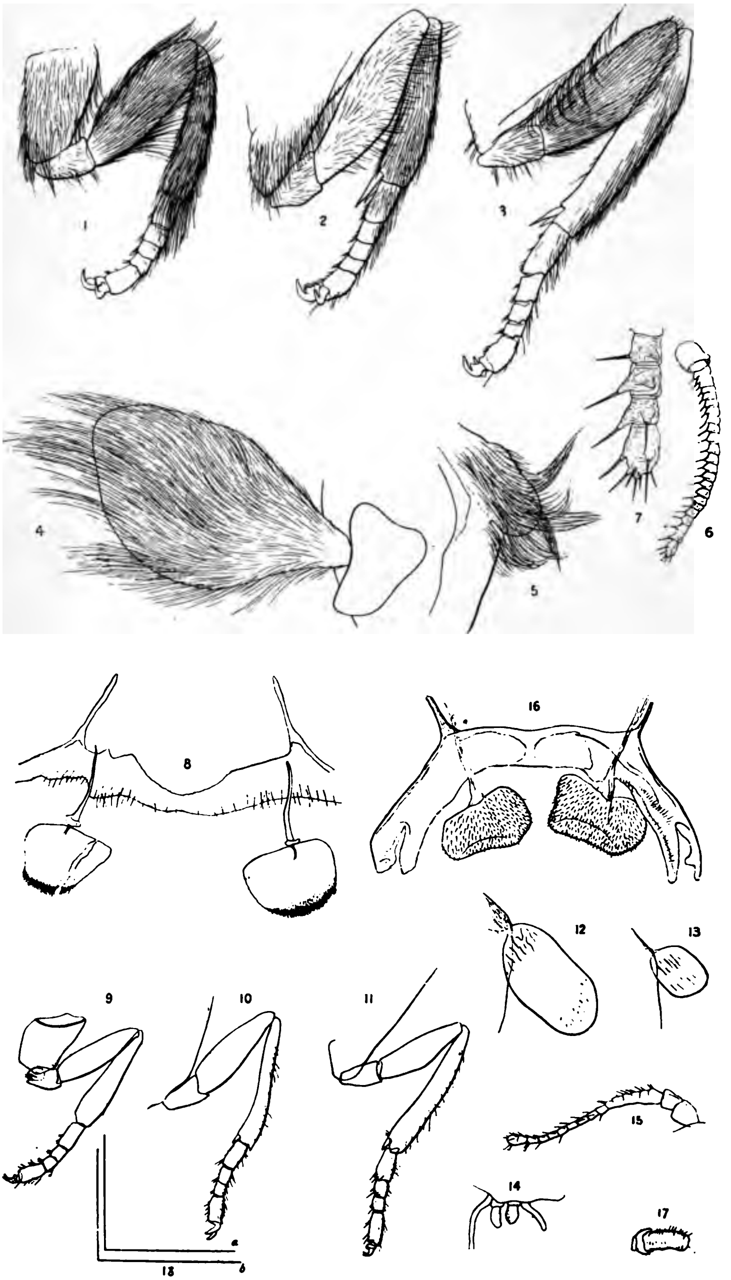
Orgyia antiqua, and splendida.



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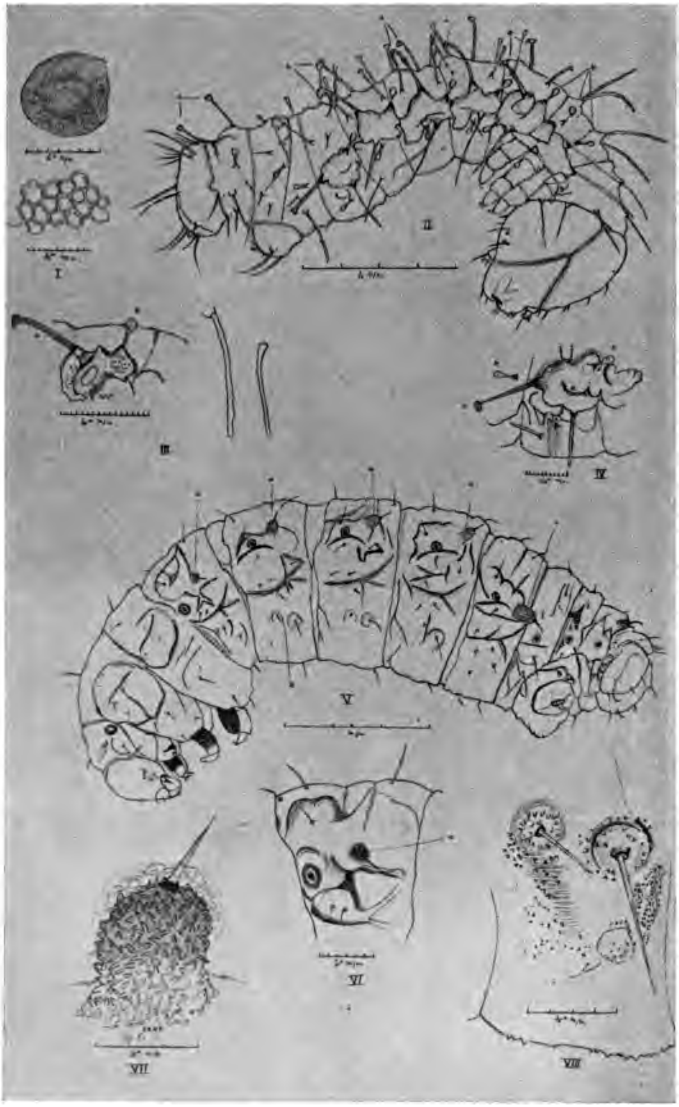

Phorodesma (Comibæna) pustulata, Hufn.

The European Orgyias: Their Specialisation in Habits and Structure (*with plates*).

By T. A. CHAPMAN, M.D., F.E.S.

Having been fortunate enough to have observed something of the most specialised European species of the genus *Orgyia*, *viz.*, *O. aurolimbata* and *O. dubia* var. *splendida*, and knowing something of the commoner northern species, *O. antiqua* and *O. gonostigma*, a review of the European species, as regards their specialisation, seems just possible. Unfortunately, I have no direct acquaintance with the remaining European species. These, so far as I am able to understand them, are very probably all one species, with a good deal of variation, as regards the formation of local races, and, at any rate, they are very close to one another in habits, if not identical. Staudinger (1901) still presents them as three species, *viz.*, *ericae*, *trigotephras*, and *rupestris*, but in such a way as to show that he rather does so in deference to tradition than as an expression of his real opinion.

We are all supposed to be familiar with *O. antiqua*. It makes its cocoon in some hollow or crack of tree or stone, in such a way that what I will call the outer cocoon is stretched as a tolerably level, smooth, surface across the hollow, and beneath this is the true inner cocoon, as a matter of fact the outer and inner cocoon are not very definitely separable in many cases; I ought to say that this is the female cocoon, that of the male is much less specialised and has rarely an outer smooth face like that of the female. On this smooth face the female imago passes all her existence till she has laid all her eggs, with greater or less regularity, as a layer over its surface. *O. antiqua* may have several broods in a year, and, apparently, always does so in the South of France and the warmer areas of its range, but it always hibernates as an egg.

The female of *O. antiqua* is structurally the least specialised of the genus (*i.e.*, of the five or more European species). Her wings are very small, but her legs and antennæ can hardly be said to differ very materially from those of an ordinary winged female. Though she cannot fly, still she is able to walk if she chose to do so; we may, therefore, suppose that, if not her structure then, her instincts are so far specialised that she only uses her feet for retaining hold of her cocoon and for the necessary movements for properly placing her egg, but never makes any attempt to leave the cocoon.

My own personal acquaintance with *Orgyia gonostigma* is of such ancient date, and was of so perfunctory a character, that I should be more honest to say I really know nothing definite about it. It luckily happens that Mr. Bacot, and especially the Rev. C. R. N. Burrows, have been able to give me fairly full details as to its habits in spinning its cocoon, emerging, pairing and egg-laying. The idea, generally held, is that the habits of *O. gonostigma* are very similar to those of *O. antiqua*, for instance, we find in Barrett that the eggs are laid closely together side by side, on the cocoon, the only difference one notes in the account given being that *O. gonostigma* covers them carefully with her "scales." This is practically the same as the accounts given us of the American species *O. leucostigma* and *O. definita*. *O. gonostigma*, however, in a detail or two of considerable importance, is not thus correctly described. The reason for the errors of observation being probably to be found in the fact that *O. gonostigma* much resents, so Mr. Burrows tells me, domestication, and rapidly dwindles in size and stamina, and its cocoon is not so well constructed as by wild specimens. Mr. Bacot tells me they will spin up in the corner of a breeding cage, much like *O. antiqua.* At large, however, the female *O. gonostigma* makes a very large and elaborate cocoon. It does not seek a crack or hollow in something solid like *O. antiqua*, but prefers to spin amongst the foodplant pulling together leaves, &c., and making a cocoon, of which the outside measure, including leaves, &c., might be about that of a cricket-ball. The real outer cocoon is, of course, not so large. Inside this is the inner cocoon or cocoon proper. The important point as to *O. gonostigma* is, that the female moth, on emergence, takes her station on this inner cocoon, but within the more or less elaborate outside loose cocoon. Mr. Burrows has not told me anything definite, but it is obvious that, in spinning the cocoon, the larva must have left a certain available space here, without any silken threads connecting this portion of the true cocoon with the outer network. It is easy to understand that a weak larva might even leave this portion of the cocoon exposed, as in *O. antiqua.* The next point in Mr. Burrows' observations is still more important and more interesting, both in itself and in the circumstance that I have not met with a record of it anywhere. This is, that in visiting the female the male has to penetrate the outer cocoon, and he has seen them, in doing so, have their wings folded together longitudinally by the pressure of the silken mesh through which they have to force their way. The outer cocoon favours the entrance of the ♂ by being provided with " structural holes, which are numerous and of various sizes. This outer cocoon is closely woven, whitish, and, I think, more or less irregular. I found the moths, *in cop.*, on July 1st, 1886. The female sat on the inner cocoon. The male was so closely squeezed inside the outer cocoon that his wings were rolled up round his body, and there was very little accommodation " (Rev. C. R. N. Burrows *in litt.*). Mr. Burrows is one of those acute observers who are, nevertheless, too modest in publishing their observations. I have to thank him sincerely for allowing me to unearth this one.

The eggs are laid within the outer and on the inner cocoon, more or less in a mass, and apparently somewhat separated by the wool of the moth. I am not quite clear as to the details of this.

This history of the habits of *O. gonostigma* is perhaps the most interesting in the whole genus, because it makes very simple what looked before an insoluble problem. How can such extraordinary habits as those of *O. aurolimbata* and *O. splendida* be derived from those of *O. antiqua* ? I put the question thus simply, but in doing so, must explain that, of course, it is not necessary to suppose that the original ancestor of *O. splendida* was *O. antiqua*, or even necessarily very much like it. Still, it must have been so far like it that there is probably nothing much nearer it, and, as we are familiar with *O. antiqua*, the slight inaccuracy in assuming it to represent the ancestral *Orgyia* is outweighed by the greater facility of expression. *O. antiqua* lays her eggs on her cocoon, and they remain there all winter; *O. gonostigma* similarly lays her eggs on her cocoon, but they hatch very soon, and it is, therefore, unnecessary for the larva to search *for a solid basis* for her cocoon, and it is made, by preference, amongst the leaves of the foodplant. The difference is practically the same that we often find between moths that emerge the same season and those that hibernate as pupæ. The cocoon that has to be occupied during winter must not be amongst the leaves of the foodplant, but have a more permanent position. The cocoon of *O. antiqua* is occupied during the winter, but, as it happens, not by a pupa, but by eggs. The cocoon of *O. gonostigma* amongst the foodplant requires, however, that the leaves be drawn together and an outer network made to support it. The station on the cocoon proper is, however, always reserved for the moth, but the access of the male is more and more hindered, till it happens that he has to force his way through the loose outer network. The step from this to *O. aurolimbata* is rather a long one, but still very obvious. Let the outer cocoon be gradually made stronger and also smaller. Let the male moth, as this process progresses, learn to force his way through the gradually stronger impediment. We get at length the outer cocoon (or the inner portion of it), like a second cocoon upon the first, the moth emerges from the one into the other, and into this the male is able to force his way. It is only one step further for these two cocoons to become to all appearance really one, there would remain, however, the original wall of the original inner cocoon as a diaphragm between the two chambers of the cocoon, and we have then exactly the structure and habits of *O. aurolimbata.*

Since the female of *O. splendida* is more specialised than that of *O. aurolimbata,* we may suppose it to be derived from the latter, *i.e.*, from some form not very essentially different from it or its more immediate ancestors. It is not so easy to picture the steps by which the modifications occurred as it is to see as it were the change from *O. gonostigma* to *O. aurolimbata.* As a very probable route, however, we may suppose the diaphragm to be lost, as a complication and a waste of energy and material. We may also suppose that the female moth acquired the method of opening the cocoon for the ingress of the male by modification of her method of passing from the one chamber of the cocoon to the other. We want, however, some intermediate species to enlighten us, just as *O. gonostigma* does as between *O. antiqua* and *O. aurolimbata.*

The point that is perhaps of the greatest interest and importance in this explanation is in the remarkable diaphragm of the cocoon of *O. aurolimbata,* proving to have a distinct and intelligible ancestry, and not in being a new structure whose origin is quite mysterious. It warns us that many other extraordinary and aberrant structures that are utterly puzzling, nevertheless have probably a simple and rational origin if we only had the necessary clue for their investigation.

(To be continued.)

Notes on Phorodesma (Comibæna) pustulata, Hufn.* *(with plate).*

By Rev. C. R. N. BURROWS.

It was not without considerable hesitation that I reluctantly consented to read a paper this season, as I share with other aged persons the feeling that it is the duty of the younger generation to come forward in such matters, and I may as well confess that it was the blandishments of your excellent secretaries, who hinted at the connection between age and experience, and the value of ripe wisdom, which once more broke down my objections, and encouraged me to promise to take up your time this evening. Having consented, I had no doubt whatever about the subject which I must select. There appeared to be no alternative. I had the pleasure, three years ago, of bringing before your notice some peculiarities in the structure of the larva of *Phorodesma smaragdaria*, and I had then, somewhat hastily I now think, almost promised to examine its near relation in the same way. This is just where I fell into a trap. Of *P. smaragdaria* I had learned a great deal, and I was able to pad out the dryness of my paper with a good many hints and suggestions, as to the habits, foodplants, and other lesser points; finishing up with a detailed examination of the variation to which that extremely local species is liable, but with *P. pustulata* the case is very different, and this is just where my troubles began.

---

* Read *before the City of London* Entomological Society, March 17th, 1903.

This is a fairly common and well studied insect. Its life-history and habits are well worked out, and the records are easily accessible. There is, as far as I have been able to learn, no variation recorded, except a difference in *size* between the sexes, and a difference in *condition* between bred and captured specimens. These differences are scarcely worthy of the title of aberrations, but I may suggest to any collectors, who may wish to add to their series intermediate specimens, that the insects *beaten out* in the morning, are, in my experience, often very much better than those netted in the evening, and, indeed, are frequently quite passable.

The moth, as I said before, is not an uncommon one, especially in wooded districts, and I suppose that, even where the oak is scarce, *P. pustulata* is able to exist, for here, where most of the trees are elm, and the oaks few and far between, I had the pleasure of netting a specimen and adding "the Blotched Emerald" to the Mucking list. I mentioned oak as the only known foodplant, but I should mention that Mr. Mera, our respected President, tells me that he once fed a brood upon knotgrass as far as hybernation. Among the many notices of the capture of the perfect insect in lists from various districts, I have noted but two really worth repeating. Mr. Tremayne a specimen "at light" at Brondesbury, on June 30th, 1897 (*Entom. Record*, vol. ix., p. 297), and Mr. Pearson at Chilwell "assembled" males freely in July, 1898 (*Entom. Record*, vol. x., p. 231). I have myself constantly taken specimens at sugar in localities where the net produced but few, and these specimens were generally in very fair condition. Above all things, however, give me bred specimens. There is a glorious charm of beauty about these, which defies description, and which it is impossible to expect in caught ones, I think that anyone who has ever had the luck to rear a series, will confess that henceforward caught ones are an impossibility, even for exchange.

Mr. Russell E. James, one of our members, publishes a curious observation in the *Entom. Record* (vol. xi., p. 103). He says that he found that the fumes of ammonia temporarily (very temporarily unfortunately) restore the green to the pinkish yellow specimens, which one so often takes in the net. It is unfortunate that the effect is *merely momentary*, as it would be a real boon to be able to restore some of the faded beauty of the common "var.," yet at the same time one feels uncertain whether such a process of converting poor into decent specimens would be quite legitimate, if it were possible.

The life story of *P. pustulata* is recorded by the Rev. E. Horton, and the Rev. J. Hellins in the *Ent. Mo. Mag.*, vol. ii., pp. 91, 114 (1865). These communications are reprinted in Buckler's *Larvae of British Butterflies and Moths*, vol. viii., part 1, p. 57, and the fullfed larva is figured in the latter work, pl. cxv., fig. 3, both clothed and unclothed. Barrett, if I remember rightly (for I do not possess his book), reprints the above communications, and figures a couple of specimens of the perfect insect—perfect in every sense, but differing only in size.

Mr. H. A. Auld contributes (*Entomologist*, vol. xxx., p. 301, December, 1897), a most interesting picture, handed to him by Dr. Knaggs, of the young larvæ, showing the attitudes assumed, and the wonderful protective use of their dress. Every field entomologist will endorse Mr. Auld's remarks as to the difficulty of recognising the larva in its complete disguise, and I hope that this spring some of my hearers, with a view to a bred series, will, when out larva-beating, take the trouble to preserve, instead of turning out, some of the *débris* beaten from the oak, and will observe whether or no they have brought home some of these curious larvæ also. I would suggest that the material be turned into a paper- or linen-bag for carriage, and that it be emptied into a shallow box, or pan, with a sprig or two of oak, covered up, and left for an hour or two to see what comes to the surface. Mr. Hellins in his before-mentioned paper, speaks of a partial secondbrood, in so far as one of his larvæ pupated at the end of August, while the rest of the larvæ went into hybernation. He does not say that the perfect insect emerged, but no doubt it did so. This reminds me of my experience with *P. smaragdaria*, of which I twice reared a partial second brood. But his rearing may have been done under cover, mine was carried on out-of-doors.

Mr. Horton in his paper, also before mentioned, discovered the manner in which the fullfed larva dressed itself, and saw the papillæ upon the sides, to which the larva attached the fragments with which it constructed its garment *with silk*. He records that, having supplied a freshly-emerged larva with rose leaves, and nothing else, the creature gnawed them up, and constructed therefrom "nine rosy favours." Probably he did not distinguish two upon the top of the 8th abdominal segment, but it is a curious confirmation of his observation that one of the full-grown larvæ, which I have mounted for examination, has lost, or never had, one of the papillæ upon the 8th abdominal segment. No other observer, so far as I can discover has ever gone further than this, and I believe no one has submitted the young larva to examination or attempted to confirm Mr. Hellins' observation, I hope, therefore, that I am the first again. Mr. Hellins' notice appeared in 1865, but appears to have been quite forgotten. I find, for example, a contributor to the *Entom. Record* (vol. iii., p. 180, 1892) remarking upon the "stickiness" of some young larvæ when hatched out, and an editorial note to the effect that " this species and *P. smaragdaria* gnaw off pieces of their food, and gum them on their bodies. The body is not, however, of believe, 'sticky,' nor is the attachment of the pieces a matter I chance."

This proves pretty clearly the state of expert knowledge in the year

1892 as to the real manner in which the young larvæ clothe themselves in these two species. I had the pleasure of going more deeply into the matter when investigating the early stages of *P. smaragdaria* in 1899-1900, and, as I have before reminded you, of laying the result of my studies before you. I think that I then laid to rest for ever the idea of "stickiness" or "gum." I showed then, I hope conclusively, that the larva of that species is provided, when it comes out of the egg, with special processes, plainly provided for the purpose, to which it attaches the particles, whatever they may be, which constitute its dress. That these particles are not attached haphazard, but are mainly, if not entirely (certainly most firmly), fixed to the special processes, by means of silk threads, so that when the garment is removed, it is found to have been fixed to them alone, and lastly, that the garment of *P. smaragdaria* does, in this country at least, serve a doubly protective purpose, for its habitat being below the level of the highest tides, the larva must be often submerged, and then the garment encloses an ample supply of air for the creature's needs, until its home is dry once more. But I confessed that I was met by a difficulty, when I found that that species is, on the Continent of Europe, an inland species, and occurs in localities which can never be submerged, and where, therefore, this kind of protection is never required, unless we can suppose that the dress is meant also to collect water from the rain, in sufficient quantity to enclose the air necessary for the creature's well-being.

It is exactly this point which meets us when we ask why is the larva of *P. pustulata* so carefully clothed? Why are the larvæ, which feed many of them high up, and all upon trees, clothed in this complete fashion? I cannot answer the question, and I doubt if anyone can yet. I have never been able to see why one creature is protected, another not. It seems scarcely fair. I do not know whether anyone has yet asserted that every creature of every kind is protected. If it be so, it seems rather hard upon the enemy. But, although I cannot say why *P. pustulata* larva is thus clothed, I am in a position to enlarge upon Mr. Hellins' observation, and tell you more fully how. I have with considerable care and much labour made large scale drawings, which I lay before you to-night, and, presenting the result of my work to you, I beg, especially if you happen to possess that faculty, which I never had, the power of portraying what you see, that you deal gently with my efforts. Please remember that I have, by optical methods and helps, done my best, and also that while I have tried to represent what I have seen, I by no means imply that I have seen or represented all that is there. I produce then, a sheet (pl. viii), upon which is shewn the larva of *P. pustulata* as it emerges from the egg, fig. ii—and also in its final stage, fig. v, with details of structure, some much enlarged. I also show my older sheet of drawings of the larva of *P. smaragdaria* for comparison,* and a third sheet upon which I have drawn my own personal idea of the transverse section of both larvæ in the different stages.

Before proceeding to explain these pictures I must not forget to say a word as to the extreme kindness with which my request for material was met last year. To Mr. L. W. Newman, Mr. Andrews, and Mr.

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* See *Ent. Record*, vol. xii., pl. vii., July, 1900.

Bevan, my most sincere thanks are due, for a plentiful supply of eggs, and I can only express my great regret that after such kindness received, these gentlemen's contributions to this paper should have been largely lost. Through some unfortunate and unexplained reason, with the exception of the few larvæ which I pickled as soon as they hatched, the whole stock entirely disappeared before the first moult. Whether they wanted the companionship of the little yellow ant, as we are told *Lycaena arion* does, or whether they did not, I do not know. I saw no lurking enemy about. This was quite a disaster to me, as I was left with only two pickled specimens, full-grown, and as it turned out when they were submitted to the microscope, very far gone towards pupation. And to make matters more trying for me, I knew that several of my friends had beaten larvæ in the spring, in just the state I wanted most, and did not send them on, as they thought I wanted eggs, and not larvæ just out of hybernation. Had I had one, just one, of these, I should have been able to place a better picture before you to-night.

You will notice at once the striking likeness between the larvæ, of the two species, and the striking differences. Again in *P. pustulata* the special hairs we noticed in *P. smaragdaria*, if hairs they can be called, again special organs. Yet I think that the young larva of *P. pustulata* is, in its way, far more interesting than the other. I find it quite impossible to place on paper the extraordinary "rugosities" of its formation. You will notice the projecting lobes upon the sides of the 1st to the 5th abdominal segments forming a sort of "shelf" along the sides, and appearing again at the dorsal angle of the 8th segment. This projecting lobe upon the first five abdominal segments is shaped and developed in much the same way, its general plan you will see from the enlarged figure (fig. iii). Notice the strong hook (fig. iii*a*) directed backwards, round which the silken web is bound by the larva to secure its own particular bunch of fragments. This hook represents the "turf-cutter" hair, or process, upon the young larva of *P. smaragdaria*. Then we have upon these lobes, and also, curiously enough, on almost every segment, thoracic and abdominal, a number of curious processes (fig. iii*b*) which I thought at first were flattened hairs, but which proved to be no hairs at all, but to be hollow, and now filled with fluid, for you will be able to distinguish bubbles in some of them. I call these "battledore processes," for, to my idea, they closely resemble in form the parchment covered plaything of our childhood. I am quite unable to understand the purpose of these curious organs, unless they be "water-bottles" to moisten the young larva, whose home is high up, perhaps above the dews, and whose dress is as dry as chaff. But what an antagonism this would present. Clothes to keep the wet *out*, and vessels to keep it *in*! and all in one tiny insect.

I apologise again for my drawing of the full-grown larva of *P. pustulata* (fig. v). The specimen was too old, when pickled, for my purpose, and it will be obvious to every entomologist that its larval days were very nearly ended. I suspect then, that its structure is somewhat modified from what it was when younger. One would expect the larval peculiarities to be now merging into the pupal, but how far? You will notice the extreme development of the special organs (fig. v*a*) which have now taken the place of the hooks. These organs are, you will observe, in the same positions, and on the same segments, as were the hooks in the young larva.

I have been unable to make out the details of these. It appears to me that, in the specimens before me, they are of ivory whiteness, or else as clear glass, and no method of lighting at my disposal throws them into sufficient relief for proper examination. The details appear, however, to be multitudes of rather short, stout hooks, or points, often lying parallel to the surface of the organ, and pointing in every direction, just the very things, indeed, that one would design to entangle a number of fine silken filaments. The special organ figured (fig. vii) is enormous in proportion, being almost half as long as the width of the segment to which it belongs.

I do not know whether the extreme development of these organs is consequent upon the age of the larva, but am inclined to think, it is not, as Mr. Hellins observed, that, when full-grown, the larva, if stripped, did not trouble to dress itself again. Knowing the purpose of the organ one would be inclined to think that its enlargement signified greater need of use. Of course you will make all allowance for the fact that my model is turned over a little on its back, and this position throws the special organs higher up than they would naturally be, while it shows too much of the undersurface of the larva.

Where now are my "battledores"? I have searched for them most carefully, but in vain. Nor have I been able to discover in the mature specimens anything to represent them. Evidently they are no longer required and are, therefore, discarded as useless. I imagine, but perhaps it is a great mistake of mine, that had my specimen been younger, at least some traces would be evident. And now some of the hairs present a strange appearance of having become flattened, broadened, and even distorted. This I do ascribe to age, and to the need for them having passed. I have tried also to represent (fig. v*b*) the large discs and hairs, as I did so in picturing larvæ of *P. smaragdaria*. But I do not think they are very striking nor likely to be of much use except to keep the silk clothes-lines from slipping. In undressing the larva, one finds that the greatest difficulty lies in freeing the lines from the special organs. There all the lines are made fast. Numerous lines appear to encircle the body in every direction, but it is quite evident that the security of the work lies in attachment to the special organs. I have made no attempt, you will remark, to draw the larva of *P. pustulata* clothed. I had no specimen in proper condition, the half-pupated ones were much contracted, and the garments quite concealed the body, and after all, when one comes to think of it, no specimen but one sparsely clothed would have the slightest interest to any intelligent entomologist, or show in any way anything worth noticing. I do not aspire to depicting scraps of oak-buds, any more than faded tufts of *Artemisia*, which proved so unsatisfactory in my former drawing, though that told the tale it was meant to tell.

EXPLANATION OF PLATE VIII.

Figure I. —The egg (hatched) and portion enlarged.
Figure II. —The larva on emerging from the egg, unclothed—(*a*) hooks, (*b*) battledores.
Figure III. —The first abdominal segment, with special organs—(*a*) hook, (*b*) battledore, (*c*) hairs from dorsal area.
Figure IV. —The fourth abdominal segment—(*a*) hook, (*b*) battledores.

Figure V. —The larva, full-grown (ready to pupate) unclothed—(*a*) the special tubercles, (*b*) discs and hairs on lower parts of some segments.
Figure VI. —The first abdominal segment with its special tubercle.
Figure VII. —The special tubercle on ventral margin of 5th abdominal segment much enlarged.
Figure VIII.—Discs and hairs. 2nd abdominal segment.

(*To be concluded.*)

Some Considerations Concerning Mimicry.

By WILLIAM J. KAYE, F.E.S.

Early in 1901 I went out to British Guiana to study the magnificent lepidopterous fauna of that region. Quite one of the most striking things seen was the wonderful similarity of a number of species of different genera, and even different families. It was not one group only (although one group was by far the most conspicuous), but a number of cases presented themselves where species were like other species of different genera and different families; butterflies sometimes even closely resembled moths. The main group consisted of Danaine, Heliconine, Ithomiine, and Erycinid species, the remarkable characteristic of the whole being a ground colour of ochreous-brown, with black and yellow markings, the hindwing with a tendency always for the black markings to spread and even to cover the whole wing area. When forced to leave owing to malaria, at the end of little more than three months, I was fortunate in finding a man who was willing to collect for remuneration, and now, with the whole of his and my own material together for study from one single road or track stretching from about 170-186 miles from the coast, one can form some idea of what species really do occur together. It is now roughly possible to determine the proportions in which these insects occur, which must be one of the fundamental points on which to decide "which species have been dominant?" It has been argued, and perhaps justly, that possibly the influential species (influential by being abundant and at the same time distasteful) is not abundant now, and that it, like so many other species, has its periods of greater or less length when it is abundant; at others, not so. Be this as it may, the statement is probably true that if a species *is* distasteful *and* always abundant, it will exert an influence over other species that are not common, and, therefore, not readily remembered by birds—their enemies. Such a species in British Guiana is *Melinaea mneme*. It will matter little whether the uncommon species somewhat resembling it are palatable or not; each might become the central figure if its numbers were to be suddenly largely increased to make it an exceedingly abundant species. Where three, four, or even more species of one genus occur, they are from the very nature of their relationship near together, and, if they have not diverged much in coloration, they may all act in concert as the patterns, each drawing such other species as may be nearest in colour and markings. *Melinaea mneme* has on the Potaro River at least two other species—*M. crameri*, *M. egina*—which are congeneric, and it is more than likely that each has done its share in attracting or indirectly drawing others, though one year *M. mneme* may be more influential by its numbers, another year *M. egina*, and so on. The *species which* are being compelled by stress of selection to conform to these patterns must be variable, or, if there are constant species that are conforming, they must have converged long ago when they had not already become fixed. *Melinaea egina* must have drawn *Heliconius silvana* at a period long prior to any other attraction, as *H. silvana* is a constant species, and must also be an old species from the large extent of its range. It is also probably true for the same reason that *Heliconius vetustus* was attracted to *M. mneme* much earlier than was *Heliconius numata*. It is easy to see that once a group, however small it may be to start with, has begun, it can go on almost indefinitely. Arguing from an extension of this theory, it would be quite possible to imagine such a case as an "all-palatable" association. It would need only that a certain one of more species should be exceedingly abundant and other species with an approximation of the same colouring to be much rarer. It would thus be not improbable that the very abundant species would act as a type, as much of the attack out of curiosity would vanish, while the rarer species, not being under constant observation, would certainly in all probability be more readily persecuted. Having got thus far in the argument, it is easy to refute the true Batesian theory of mimicry altogether, which says that a palatable butterfly mimics a distasteful one. Much more proof is needed of the palatability or otherwise of various butterflies before one rejects the Batesian theory as unworkable in practice. It is of frequent occurrence to find that the so-called palatable mimicker is far more abundant than the so-called mimicked species. This would not, therefore, be of much, if any, advantage, to the palatable species, especially if the coloration was not very distinctive. If, however, both species (mimicker and mimicked) were more or less distasteful, the benefit to the commoner would probably be no less great than if it were a palatable species. It is agreed that the attacks are mostly those made by young birds out of curiosity, and the rare species would always be more of a curiosity than the common one. There is plenty of evidence now that nauseous species are attacked; specimens that have notches taken out of both fore- or hindwing that coincide cannot have lost them by any ordinary wear and tear. Once the association is formed and attained a fair size by a number of species conforming to a certain pattern, the force acting to bring in fresh members is considerable, and, if the various species fluctuate much in numbers, the conformity will be all the greater and the equalising force all the stronger, moreover, fresh arrivals would have a much easier way of gaining protection by assimilation of colour. For this reason it is explicable how, in a large group, no two members are excessively alike, while, in small groups, where presumably one of the species is always much more abundant, one finds often practically complete assimilation. We know that, for the practical working of the Müllerian theory, experimental attacks by the insect's enemies must go on, and also be exceedingly numerous, as is now proved by specimens being so often caught with notches snatched by birds from both fore- or both hindwings when at rest. We are in the habit of assuming that the central or typical species is the most distasteful, but is it necessary? A species that was much more distasteful, but not at all common, would be open for considerably more attack than the abundant semi-distasteful species, because the notion of "out of sight, out of mind," would come into operation.

It is interesting, though not very profitable in results, to carry one's theories to any extent. Much still remains to be done by observation in the field. I was, however, fortunate enough one day to see on the same bush, in the interior of British Guiana, specimens of *Lycorea pasinuntia*, *L. ceres*, *Melinaea crameri*, *M. mneme*, and *Heliconius vetustus*. With their wings closed, unless one got very near, all these appeared alike, and no opponent of any theory of mimicry could deny that it was a distinct advantage to each individual specimen to be like many others. Several other species have since been taken by my correspondent on the Potaro River, where I saw and took my specimens, and very likely some have come off the large bush that presented such a picture to my eyes. Whether any of the above are palatable or not would make very little difference; all being so much alike, they share each other's dangers from experimental attack. In other words, it is a life insurance in which every species takes its share of the risks. Such groups as this are numerous in the particular locality cited, but I much doubt if a single instance of a Batesian case exists. If the attack be experimental, and not persistent, it would be merely accident if one species were palatable while another was not so. What are the palatable species? One hears the Pierines given, and yet the vast majority of the Pierines are not protected by being like other species which are not palatable. There are admittedly exceptions, as is seen in the ♀ s of the *Mylothris* species, which resemble some Danaines and Ithomiines. Some members of the genus *Dismorphia* are also well protected in both sexes, but if the Pierines were in general sought after as tasty morsels, one would expect, at least, all the large conspicuous species to be protected, but this is not apparently the case. Large species of *Pieris* or *Daptonoura* are often *not* abundant, and rarely, if ever, have any ally for protection. If the Müllerian theory is true (and it is very difficult not to accept the broad lines), there is scarcely need for the Batesian theory at all, and our hitherto so-called palatable and distasteful species may all have very much the same flavour.

The Hesperiides of Brittany.

By CHARLES OBERTHÜR, F.E.S.

I am interested to learn that *Hesperia alveus* is reported to have been found in England. I have always thought that this species ought to be found in England, and I believe that some day you will find *Carcharodus alceae*, which is a very common species in Bretagne, also on your south coast. In Bretagne, *H. alveus* is very local, and never abundant. It is to be found in the fields in the neighbourhood of Rennes, particularly at the end of August and commencement of September, but it is always difficult to catch many specimens; one only meets with it in small numbers, usually singly. I have also taken *H. alveus* at the end of May and commencement of June, but even more rarely then than in August and September.

The best locality, to my knowledge, in the department of Ille-et-Vilaine, for *H. alveus*, is the dune of Miel-Pot, between St. Malo and Cancale; this dune is formed of an "amas" of hard sand, covered with a rich vegetation of *Rosa pimpinellifolia*, *Ulex*, *Trifolium*, *Carex*, *Eryngium maritimum*, &c. On this dune one finds *H. alveus* at the commencement of June, and again from August 15th to September 10th, and one is able to take almost every day some specimens. The fact that leads me to believe that *H. alveus* and *C. alceae* ought to be found in England is that the English Hesperiids are really the same species as the Breton ones, except *C. alceae* already noticed, *Heteropterus morpheus*, an erratic species, common in the tall herbage of the forest of Rennes, the forest of Paimpont, the woods and ditches of certain fields at Mesneuf, but which is absent in many French localities, and is a species that I have never supposed to live in England.

The following list of the other species of Hesperiids, found in the neighbourhood of Rennes and the coast of Cancale to St. Malo, should be carefully compared with the list of Hesperiids found in England. These are:—(1) *Thanaos tages*, (2) *Hesperia malvae* and ab. *taras*, (3) *H. alveus*, (4) *Adopaea lineola*, (5) *A. thaumas*, (6) *A. actaeon*, (7) *Augiades comma*, (8) *A. sylvanus*, (9) *Carterocephalus palaemon*. The first eight species live on the coast and in the neighbourhood of Rennes; the 9th, *C. palaemon*, is only found in the forests, it is on the wing now (early June), and is extremely abundant in the forest of Rennes. Some Hesperiids, common over a great part of France, *e.g.*, *H. carthami*, *H. sao*, and *H. serratulae*, have not yet been found in Bretagne. They are not likely to be found in England. *Carcharodus alceae* flies in April, but occurs more abundantly in August. This also is a littoral species in Bretagne, and I have taken it many times on the lawn of my garden at Cancale. I feel convinced that one should find it in Jersey and Guernsey, and that some day it will be found on the south coast of England, like *Callimorpha hera*, a most abundant species in Bretagne, and one that migration, aided by southern winds, has comparatively recently introduced into England.

I thought this note might prove interesting as drawing attention to the need of a comparison being made between the English and Breton Hesperiids.

COLEOPTERA.

SYNONYMICAL NOTE ON THE LATHROBIUM ATRIPALPE AND L. PUNCTATUM OF THE BRITISH LIST.—In the *Ent. Mo. Mag.*, 1902, p. 88, Dr. Sharp writes of *Lathrobium atripalpe*: "The insect is at present rare to an extent that is quite surprising, and it would be well to wait for more information before attempting a final conclusion on the matter, though the existence of an unnamed species in the British list seems rather an anomaly now-a-days." I am glad to say that I have been able, with the kind assistance of M. Fauvel, to clear the matter up. Mr. F. H. Day, having sent me specimens of the Cumberland *atripalpe* to examine, I took them to the Museum to compare, and I found them to be a distinct species, though certainly not the *atripalpe* of Scriba, as on looking up the original description it was evident that he refers to a species more like *terminatum*, whereas these specimens come nearer to *punctatum*. I therefore sent them, together with a specimen of the latter, to M. Fauvel, who tells me they are the *punctatum*, Zett., and our *punctatum* is the *fovulum*, Steph. The synonymy is as follows—

1. *Lathrobium punctatum*, Zett.
    zetterstedti, Rye ("Ent. Ann.," 1872, p. 25).
    atripalpe, Brit. Cat., *nec* Scriba.
2. *Lathrobium fovulum*, Steph.
    punctatum, Brit. Cat., Er., Fowler, *nec* Zett.

I have compared both species with their original descriptions, and find they agree well. *L. punctatum*, Zett., may be known from *L. fovulum*, Steph., by the dark palpi, which are clear red in the latter. The punctuation of the head and thorax is denser, and the elytra are more strongly and closely punctured and relatively shorter, being shorter than the thorax. The insects taken by Dr. Sharp in Scotland and recorded as *atripalpe* are probably *punctatum*, Zett., as are also those taken by Mr. W. E. Sharp, Snowdonian Mountains (*Ent. Record*, 1898, p. 272); Mr. F. H. Day, Pennines (*Ent. Record*, 1900, p. 100); Mr. Thompson, Upper Teesdale (*Ent. Mo. Mag.*, 1902, p. 111); Mr. Gordon, Wigtownshire (*Ent. Record*, 1903, p. 47); Professor Beare, near Edinburgh (*Ent. Record*, 1903, p. 103); and Mr. Britten, Pennines (*Ent. Record*, 1903, p. 150). I also sent a specimen of a *Lathrobium* to M. Fauvel, I captured in North Wales (*Ent. Record*, 1897, p. 50) and which I had looked on as a dark form of *terminatum*. He writes it is a most interesting specimen, as it forms an exact transition between his type ♂ *atripalpe*, Scriba, and *quadratum*, Pk. He also states that he considers both *terminatum* and *atripalpe* to be vars. of *quadratum*, Pk. It is evident, therefore, that the true *atripalpe*, Scriba, is a variety, but whether British I know not.—HORACE DONISTHORPE.

COLEOPTERA IN SCOTLAND.—Since my last note (p. 103), I have been fairly successful in turning up good species, and a few notes on my captures since the middle of March may be of interest.

After the 14th of March bad weather prevented a second visit to Cobinshaw reservoir until the 27th of the month; unfortunately that day, though it promised fine, turned out very windy and showery. In the flood refuse, in addition to most of those taken on the 14th (p. 103), the following occurred: *Amara apricaria*, Pk.; *Philonthus varians*, Pk.; *P. aeneus*, Rossi; *Oxypoda opaca*, Gr.; *Stenus tarsalis*, Ljun.; *Tachyusa atra*, Gr.; *Prasocuris aucta*, F.; *P. marginella*, L.; and *Phaedon cochleariae*, F.; these last three were in great abundance in one heap of refuse.

On April 2nd I had a day with Mr. Evans at Harperrig reservoir. On the way from Mid-Calder station to the reservoir we worked a lot of hay refuse, which had been thrown up by a flood in a small stream some time before. Here we secured *Megarthrus sinuatocollis*, Lac.; *Micropeplus margaritae*, Duv.; *Atomaria fuscata*, Sch.; *Cryptophagus saginatus*, Sturm.; and many other common insects usually found in such refuse. Under bark of fir stumps in a plantation about a mile beyond the station the following were taken: *Ips 4-pustulatus*, F.; *Ocyusa incrassata*, Kr.; *Dryocoetes autographus*, Ratz.; *Trypodendron lineatum*, Er.; *Tomicus acuminatus*, Gyll.; *Pityogenes bidentatus*, Hbst.; *Hylastes ater*, Pk.; *H. palliatus*, Gyll.; *Hylurgus piniperda*, L.; *Rhizophagus ferrugineus*, Pk.; and *R. dispar*, Pk. There was abundance of flood rubbish at the reservoir, and though many of the insects found at Cobinshaw were found, a number not seen at that place turned up, including, amongst others, the following: *Bembidium bipunctatum*, L.; *Mycetoporus lepidus*, Gr.; *M. longulus*, Man. (both common); *Quedius fulvicollis*, Steph. (very scarce); *Staphylinus erythropterus*, L.; and *Philonthus decorus*, Gr.; under sheep dung on the moor near the reservoir we got *Aphodius conspurcatus*, L.; *A. constans*, Duft.; and *A. ater*, De G.; the two former appear to occur all over this district, but are very rare. On the 7th of April I paid another somewhat hurried visit to this reservoir, securing further specimens of most of those taken on the previous visit, and a nice specimen of *Acidota cruentata*, Man., and a number of *Lathrobium*, which are either *punctatum* of the British Catalogue, or the *atripalpe* of the British Catalogue. I am not certain at present which, as I have not had a chance of comparing them with authentically-named specimens from other districts.

On Good Friday, April 10th, I was again out with Mr. Evans. This time we visited Threipmuir reservoir; here, again, there was much refuse, and a further variety in the insects, the following, amongst others, turning up: *Ocalea castanea*, Er.; *Quedius umbrinus*, Er.; *Q. attenuatus*, Gyll; *Tachyusa atra*, Gr.; *Lesteva muscorum*, Duv.; and the same *Lathrobium* as at Harperrig in great numbers, it was quite the insect of this flood refuse; and, lastly, a few *Phytobius canaliculatus*, Fähr.

The remainder of April I was in the south, and so northern insects had a rest. My first outing in May was to Fauldhouse Moor, on the afternoon of Saturday, May 9th. An hour's work at a pond produced *Agabus arcticus*, Pk.; *A. sturmii*, Schön.; *Rhantus bistriatus*, Berg.; *Ilybius fuliginosus*, F.; *Colymbetes fuscus*, L.; *Acilius sulcatus* var. *scoticus*, Steph.; *Hydroporus erythrocephalus*, L.; *H. pubescens*, Gyll.; and *H. palustris*, L.

On the 19th I had a day with Mr. J. Black on the moss near Gordon, Berwickshire. Here, after much labour, owing to the peat holes having been filled up with branches of firs, I secured a small series of *Acilius fasciatus*, De G. In the same pools occurred *Agabus affinis*, Pk.; *A. sturmii*, Schön; *Hydroporus tristis*, Pk.; *H. umbrosus*, Gyll.; *H. memnonius*, Nic.; *Philhydrus nigricans*, Zett.; and many common water-beetles. It was too early in this backward season to obtain much from beating and sweeping, the best things being *Coeliodes rubicundus*, Pk.; *Ceuthorhynchidius versicolor*, Bris.; *Tropiphorus mercurialis*, F.; *Megarthrus denticollis*, Beck.; *Acidota crenata*, F.; *Cyphon variabilis*, Thunb.; and *C. punctipennis*, Shp.

On May 21st, under stones on Arthur's Seat, *Corymbites holosericeus*, F., and *Barynotus schönherri*, Zett., were found.

On the 23rd and 26th of the month I paid two hurried visits to Arniston grounds on the South Esk; here I swept off gorse by the roadside, *Crepidodera rufipes*, L., in plenty; out of the branches of a fallen Scotch fir I beat *Adalia obliterata*, L.; and one specimen of *Otiorhynchus septentrionis*, Hbst. On the banks of the Esk I was at length rewarded for the many times I have swept and searched primroses by obtaining a nice series of *Eusphalerum primulae*, Steph.; they occurred right down at the bottom of the corolla-tube, and would not, I think, have been taken if the flowers had been merely swept, but by picking the flowers and gently splitting the tube, they were found in plenty, busy either sucking the honey from the nectary, or else occupied in the important business of coupling. I have to thank Mr. Evans for this capture, as he gave me the hint where to try for this beetle. The young birch trees, now coming into full leaf, were beaten without much success, the only common beetle being *Polydrusus cervinus*, L., and I was much struck with the extraordinary resemblance in shape and in colour they presented, when lying motionless in the net, with legs and antennæ folded close to the body, to the buds of the birch which fell with them into the beating-net; it was almost impossible to distinguish them until they began to move.

On Saturday, June 6th, I paid a long meditated visit, with Mr. Black, to Aberlady, mainly in quest of *Telephorus darwinianus*, Shp.; we were fortunate, and soon after arrival on the ground the first specimen was taken, and, thereafter, we each secured a good series; they were found beneath seaweed mostly, just about high-water mark, but, later in the day, the hot sun brought them out into the open, and we found a good many running and flying about the grass at the edge of the sandhills. The whole life-history of this insect is very curious and interesting. Under the same seaweed we secured the usual seaside beetles, such as *Cercyon depressus*, Steph.; *Aleochara obscurella*, Gr.; *Homalium riparium*, Th.; *Heterothops binotata*, Steph., &c.; and running on the sand *Bledius fuscipes*, Rye, with *Dyschirius thoracicus*, Rossi. While taking our lunch on the sandhills a specimen of *Telephorus fuscus*, L., flew on to Mr. Black; this is a very interesting capture, as Canon Fowler says its occurrence in Scotland is very doubtful, though Murray records it. Walking on the dry sand in the barren sandhills, which fringe a portion of the golf links, I found *Morychus aeneus*, F., and several specimens of the variety of *Coccinella* 11-*punctata*, L., with confluent apical spots, which has been recorded already from similar localities in Scotland and Ireland. Before returning to the railway station, I swept a number of plants of *Sisymbrium officinale*, and secured a long series of *Ceuthorhynchidius pyrorynchus*, Marsh., which Canon Fowler says occurs in Scotland only very rarely in the Solway district. It was in numbers, and with it there were *C. floralis*, Pk., *Ceuthorhynchus quadridens*, Pz., *C. assimilis*, Pk., *C. contractus*, Marsh., &c.

My record closes with the capture on the afternoon of June 13th of *Deliphrum tectum*, Pk., a nice series, in sheep-droppings on the Pentland Hills; it was very scarce, and required a long search to secure a series; with it *Aphodius lapponum*, Gyll., *A. ater*, De G., *A. depressus*, Kug., *A. putridus*, Cr., and many species of *Cercyon* occurred in great profusion.—(Professor) T. Hudson Beare, B.Sc., Regent Terrace, Edinburgh. *June 15th*, 1903.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Pupa of Epinephele pasiphae.—Length 12mm., antero-posterior width 5mm. at mid-mesothorax and at metathorax, and nearly 6mm. at 3rd abdominal; lateral measure from wing-spines to 3rd abdominal uniformly 5mm.

Measurements.	From front (nose-horn) to	Antero-posterior measure at	Lateral measure at
Front mesothorax ..	0·5mm.	3·0mm.	2·0mm.
Mid mesothorax ..	2·0mm.	5·0mm.	5·0mm.
Post mesothorax ..	3·0mm.	5·0mm.	5·0mm.
3rd abdominal	8·0mm.	6·0mm.	5·0mm.
End 4th abdominal.	9·0mm.	4·0mm.	4·0mm.
Base anal spine	11·3mm.	0·3mm.	0·5mm.
End anal spine	12·0mm.		

FORM.—These measurements do not show that from nose-spine, which forms the extreme apical front of the pupa, for nearly 8·0mm. the ventral line of the pupa is quite straight. The dorsal line (from nose-spines) proceeds nearly backwards, *i.e.*, what might be called the front of the pupa (the head and prothorax) sweeps round continuously into the dorsum, so that at 2·0mm. posterior to the front the antero-posterior width is 5·0mm., the dorsal is then parallel to the ventral line, till a marked waist is formed at the mesothorax, when again the dorsal line recedes from the ventral to the deepest part of the pupa (6·0mm.) at the 3rd abdominal segment. Hence the front line bends backwards to the end of maxillæ, continuing in nearly the same line to the cremastral spike. Dorsally the outline is, from the 3rd abdominal segment to the base of spike a continuous curve. Viewed dorsally or ventrally the pupa has a square front (nose-spines) 2mm. across, in the next 2·0mm. it sweeps outwards to the wing-spines, with square outline, where the width is 5mm., which is continued along the wing crest (continuous and identical with Poulton's line) to the 3rd abdominal, the two sides being parallel, hence it tapers regularly, the cremastral spine is 0·7mm. long, 0·3mm. thick, and 0·5mm. wide, and is directed rather more ventrally than posteriorly. ANGLES.—The nose-spines present a somewhat sharp transverse ridge (2·0mm. long) as the extreme anterior portion of the pupa, the ends of the ridge are sharp angles, the angles of a cube, as two other sharp ridges, at right angles to the first ridge and to each other, proceed, the one backwards, the other dorsad (in descriptions of pupa it is necessary, though somewhat difficult, to remember that dorsal is the opposite of ventral, and backwards the opposite of forwards). The former fading out at base of 2nd legs (1·5mm.), the latter when approaching antenna (0·9mm.) The wing-spine has a somewhat complicated aspect. Dorsally it repeats in outline (1·5mm. further back and further out), the nose-spines. There starts, from the outer margin of antenna, opposite middle of eye, a sharp ridge with a slight curvature, which forms the sharp point of the wing-spine, and thence proceeds backwards, as a sharp angular ridge, identical with Poulton's line, for 5·0mm. to the anal angle of the wing. From the wing-spine a short ridge passes directly dorsally. The anterior lip of the 1st spiracle forms a small ridge or spine, which associates itself with the wing-spine by a short, blunt ridge, and there is thus enclosed a small square area. The blunt ridge is, in the specimen described, conspicuous from being a pale line, almost the palest portion of pupa. The cremastral spine is thin and flat dorso-ventrally, rather wider laterally; it is blunt, with some rounded marginal rugosities, but no hooks or hooked bristles. The wing-ridge divides the wing into a small dorsal portion, at its widest quite 1·0mm. wide, which faces nearly dorsal, and the main portion of wing, which is flat rather than rounded, and faces between ventrally and laterally, leaving the antennæ, maxillæ, and legs to form a flat ventral surface near the head, and, opposite the 3rd abdominal segment, almost a keel. APPENDAGES.—The glazed eyes are nearly a semicircle, facing very little forward of ventral. The central rough area, the glazed margin, dipping down to the actual line, then a very narrow glazed line, followed by a dull, but hardly rough, dark area, occupying the space between the antenna and the pale backwards ridge of the nose-spine. The antennæ start on the dorsum, very close together, and curling round reach the end of the wings. The centre of the ventral, nearly square, area below the nose-spines has some very small tubercles that are probably labium and mandibles. Then the maxillæ continue the square area downwards, gradually narrowing to a very slender line before they finish at end of antennæ. The width here of antennæ and maxillæ together is only about 0·8mm. The ventral angles from nose-spines are just in line with the margins of maxillary margins, and approximate a little, just as the maxillary margins continue to do. Outside the maxillæ the first pair of legs are extremely slender, and little more than 1·0mm. in length, and might be easily overlooked. The second start from below the eyes, and extend nearly 6·0mm. to the ventral prominence of appendages. The wings are very ample, 9·0mm. long and nearly 5.0mm. wide. As already noted, their chief area is very flat, between the wing-ridges behind and the antenna in front. Poulton's line marks off a wide area, 1·0mm. at the origin of the wing at inner margin, narrowing to anal angle, about 0·4mm. round hind margin, and at apex about 1·2mm., the line being rounded, the apex pointed. The hindwing is a narrow margin, apparently uninfluenced by the spiracles, and just reaching the 4th abdominal segment. There is a dorsal suture, through prothorax, mesothorax, and metathorax, but not very distinct on 1st abdominal. On front half of mesothorax it is emphasised by distinct black ridge. MOVABLE SEGMENTS.—The only movement allowed is somewhat restricted between the 4th and 5th abdominal segments, other incisions seem to be quite anchylosed. SCULPTURE AND COLOUR.—The colour is rather dark terracotta much overlaid with black, so that it is rather a dark pupa. The appendages are wrinkled very finely transversely; the maxillæ pale with sulci dark, legs very dark. Antennæ with the segments marked out, dark, with a white dot marking raised central spot on each segment. The wing is very dark outside Poulton's line on inner half. The main area is pale with longitudinal dark lines. The veins pale, ending in a dark spot, margined by darker; but vein 4 is dark, with light colour along its front margin, and the costal region is light; the cell is also longitudinally clouded. The mesothoracic sculpture is in rounded raised fine ridges, divided into small islets, not continuous enough, perhaps, to be called ridges. The summits of these are pale down each side of the dorsal line, posteriorly, and in a few lateral patches, looking as if the whole had been black, but the colour worn off in some prominent places. The metathorax is more definitely marked by transverse ridges, but very finely, a few of the ridges, especially at the outer front corner, are pale. The 1st and 2nd abdominal segments have transverse ridges right across, looking (and probably being) more like subsegmentation than sculpturing strictly. Behind these the sculpturing is in minute raised bosses, in some degree arranged transversely, the summits of these being more or less pale. The abdominal segments (dorsally) have other markings—rather difficult to interpret. They are all much alike, but taking the 4th as the simplest and clearest, there is a suggestion of division into three equal subsegments. The two division lines, just outside the median line, are two transverse black impressed lines, and appear to continue outwards as impressed lines—difficult to see because uncoloured—and then fade out. The front one, however, reappears half way to spiracle as a similar impressed black line, which is not, however, quite straight. It continues thence down to front of spiracles as a definite incision. The posterior one also reappears opposite this; both are nearer the margins of the segment than they are dorsally. The other segments are similarly, but less plainly, marked. On 1, 2, and 3, about level of tubercle iii, is a faint indication of a pale eminence or boss. A tendency to a dark dorsal line ends in last three segments as a very fine line; the rest of these segments are pale, with a large dark cloud on the centre of either half. The spiracles of 1, 2, and 3 are hidden beneath wings, of 4, 5, 6, and 7 are small black oval spots. Ventrally the abdominal segments are dull and dark, with little sculpture or variation of colour. On 5 and 6 the proleg scars show as flattened circles with a slightly paler margin. The two points on 9 are raised as minute black knobs, except that they are some distance apart they suggest the male tubercles, these, however, are seen between them, and are very small and pale. The anal region is large, flat, and circular. [The pupa from which this description was made was received from Mr. Powell (Hyères) on May 9th, 1903.]—T. A. CHAPMAN, M.D., Reigate. *May 14th*, 1903.

PUPATION-HABIT OF EPINEPHELE PASIPHAE.—The pupa of *Epinephele pasiphae* lies free on the ground, in the thickest part of the grass. It looks like a pupa that ought to be hanging up, although there are no hooks on the cremaster.—H. POWELL, Maison Regnier, Rue Mireille, Hyères. *May 8th*, 1903.

PUPARIUM OF MELANARGIA SYLLIUS.—A larva of *Melanargia syllius*, that I have reared from ova, pupated during April, and gave a plump healthy-looking pupa. It lies in a hollow on the ground and is covered with a few dead leaves, sticks, and stones, which the larva spins together with some threads, making a poor attempt at a cocoon; the spinning is slight of course, and one would hardly call the result a cocoon, though the intention is clear enough.—IBID.

PUPARIUM OF HIPPARCHIA CIRCE.—The larva of *H. circe* which I have kept throughout the winter is full-fed, and just now is pupating. The peculiarity of this operation is that the larva buries itself very deeply in the ground to pupate, almost like a Sphingid larva. I found the earth turned up in one of my pots as though a mole had been at work. Digging carefully down, I found the *H. circe* larva at a depth of between 3½cm.-4cm. This disturbed it, and it came up, but the same night went down in another part of the pot, and I have, of course, not disturbed it since. Last year I had a larva of this species which pupated in the middle of a tuft of grass. It did not bury itself, probably because the earth was too hard. In the present case the earth was fairly compact, and gave the larva some work to do.—IBID.

PRACTICAL HINTS*.

Field work for July.

1.—During the first week of July is a good time to work for *Tortrix piceana*. The moth flies at dusk round *Pinus sylvestris*, usually near the tops of the trees, therefore a long-handled net is necessary to secure it. So far this species is only recorded from Hampshire and Surrey.

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* "Practical Hints for the Field Lepidopterist," Pts. I and II each contain some 1250 practical hints similar to these, but relating chiefly to the *Macrolepidoptera*. Interleaved for collector's own notes. Price 6s. each part.

2.—*Tortrix transitana* should be sought for about the first fortnight of this month amongst its foodplants (elm, birch, and poplar). It may be found at rest on tree-trunks, or by beating, but when the latter plan is adopted, the late afternoon will prove most productive. Its time of flight is at dusk, when it flies briskly around tree-tops.

3.—In fenny districts *Sericoris doubledayana* often occurs in considerable quantities, flying in the late afternoon sunshine.

4.—*Ephippiphora tetragonana* is to be found throughout this month, and occurs commonly in many woods in the southeast of England. The simplest method to obtain it is to visit some fairly broad riding on a bright afternoon about five o'clock, at which hour its flight commences. The moth appears very small when flying, owing to the white spot on the forewing only then being visible.

5.—If, after four o'clock in the afternoon, a position is taken up amongst beech trees, towards the beginning of July, the imagines of *Carpocapsa grossana* will most probably be observed flying wildly round and over them. A long pole as handle to one's net is necessary to make captures. This insect is very liable to injure itself if carried in a pill-box.

6.—*Scardia corticella* occurs throughout the month on the stems of partly decayed trees. Very careful search must be made to detect the moth, as it sits in the fissures of the bark, where it is easily passed over for an unevenness in the bark, or a piece of lichen.

7.—During this month vast quantities of Micros may be obtained by smoking them out with a pair of bee-bellows, from low and thick-growing herbage. This is pre-eminently the way to secure the *Gelechiidae* frequenting sand-dunes, heath, and rough ground generally. Great care must be exercised or a conflagration may arise.

8.—*Tortrix viburniana* is to be found during July, and is most partial to moors and rough, swampy ground. It flies at dusk, and can be disturbed from low-growing vegetation during the day. It is as well to net and examine a number of specimens, the species, in some localities, being very variable.

9.—Larvæ of *Peronea mixtana* may be obtained during this month in terminal shoots of *Calluna vulgare.*

10.—If the patches of *Thymus serpyllum* growing on chalk downs are carefully watched on a bright afternoon towards the end of July, the imagines of *Lita artemisiella* should be found flying amongst them.

11.—By visiting granaries and carefully examining the walls and sacks, large quantities of *Sitotroga cerealella* may often be discovered during July. The moths prefer dark corners, and press themselves into small holes in the brickwork and folds in sacking.

12.—*Paltodora cytisella* is well out by middle of July, and is to be obtained amongst *Pteris aquilina.* On mild and calm evenings it sometimes occurs very freely at about eight o'clock.

13.—Early in July *Butalis senescens* is to be found flying in the afternoon sunshine amongst its foodplant, *Thymus serpyllum.* It has a preference for chalk downs and railway banks.

14. *Laverna stephensi* occurs from the middle to end of July, is very local, but not uncommon in its haunts. It rests on the stems of old oak trees, usually very low down, often only just clear of the ground.

An especially good spot to search for this moth is in the "bays" at the bases of the trees.

NOTES ON COLLECTING, Etc.

Lepidopterological Notes.—I had an example of *Cucullia lychnitis* emerge from pupa on June 2nd, *Spilosoma fuliginosa* on May 30th and June 2nd, both species new to me. I have at the present time in the cages fine broods of feeding larvæ of *Ennomos autumnaria* and *E. alniaria.* All my *Ptilophora plumigera* and *Hoporina croceago* have gone to earth, whilst six *Tiliacea aurago* larvæ have spun cocoons on the ground, or attached to dead leaves of sycamore. I am very satisfied with the latter, as it is the first time I have seen this larva pupate.—J. Henderson, 24, Birchin Lane, London, E.C. *June 4th,* 1903.

Whit Monday in Berks.—It was very hot on Whit Monday, June 2nd, but I was all over Sulham Woods and Purley, near Tilehurst, Berks. I found insects numerous, especially *Euchloë cardamines*, but it was much too hot to do any vigorous collecting.—Ibid.

Drymonia chaonia in Kew Gardens and Cyaniris argiolus in St. John's Wood.—It is not often that I get the chance of observing an insect nowadays, but I happened to-day in Kew Gardens to see a specimen of *Drymonia chaonia* which fluttered down to my feet. It seems rather an urban locality for it, and I suspect on this account it is interesting enough to make a note of. My last urban insect of interest under somewhat similar conditions was *Cyaniris argiolus*, which was sitting on the pavement near St. John's Wood Road Station.—W. F. H. Blandford, M.A., F.E.S., 48, Wimpole Street, W. *May 24th,* 1903.

Vespidæ in Durham.—Yesterday, while collecting near Ebchester, co. Durham, I was astonished to see numbers of fine female wasps flying, and boxed several. On reaching home I was examining them along with Mr. Chas. Robson, when, amongst several *Vespa vulgaris*, we found a perfect female of *Vespa austriaca.* This wasp has never been recorded for Durham before, but was recorded for Killingworth, Northumberland, by Mr. Robson, in 1899. We do not usually get wasps here in any plenty, but up to date this year the following have been taken :—*Vespa vulgaris, V. rufa, V. sylvestris,* and *V. austriaca.*—J. W. H. Harrison, 2, Craig Street, Bertley R.S.O., Durham. *June 11th,* 1903.

Plusia moneta in Cambridgeshire.—Although the season up to the present appears to be anything but a good one, yet *Plusia moneta* has occurred in round numbers, my friend Mr. Scott and myself having taken over six dozen larvæ. My own have been taken in various gardens in the town of Cambridge, whilst Mr. Scott has taken the major part of his in a garden in the village of Haslingfield.—E. Crisp, 31, Union Road, Cambridge. *June 12th,* 1903.

Plusia gamma at sugar.—With reference to Mr. C. W. Colthrup's note (*antea* p. 157), headed as above, the occurrence there recorded is, in my experience, by no means so unusual as he appears to think. I have frequently seen and taken *Plusia gamma* at sugar, even in the course of a single season, and, although I do not remember ever to have observed it at this bait in large numbers on any one particular night, my diary contains various entries of its being "not uncommon," or of "a few" being met with, at sugar, on some particular evening, and I have repeatedly come across odd examples whilst they were busily engaged in feasting on the treacle.—Eustace R. Bankes, M.A., F.E.S., Norden, Corfe Castle. *June 13th*, 1903.

Lepidoptera at Clandon and Folkestone.—Although stormy in the suburbs of London on May 30th, I ran down to Clandon, and was rewarded by a brilliant day (temperature 80° in the shade). Lepidoptera were backward, *Euchloë cardamines* only just out, *Aglais urticae*, *Pyrameis atalanta* and *P. cardui* were observed ovipositing; *Callophrys rubi* were getting worn, *Polyommatus icarus* and *P. astrarche* only just coming out, although *Nemeobius lucina* was out in good numbers. *Ematurga atomaria* was swarming on the downs, and some very dark males were taken, in fact, this form seems to predominate at Clandon, whilst at Folkestone the light form occurs most frequently. *Bapta taminata*, *B. temerata*, *Asthena candidata*, *Rumia crataegata*, and *Venilia maculata* were all beaten, but in fresh condition. From a garden I obtained two larvæ of *Plusia moneta* on *Delphinium*; they were hidden in the heart of the buds. From one of five larvæ captured on Easter Monday, and which afterwards duly pupated, an imago emerged on June 1st.

On June 2nd I paid a visit to Folkestone. This was another very hot day (83°F. in the shade). Here, also, everything was backward. *Polyommatus bellargus* was only just emerging, and of five males taken one showed the greenish-blue tint which characterises some specimens, and I also took one very finely spotted female. *Polyommatus icarus* and *P. astrarche* were just appearing, *Cupido minima* in numbers and in beautiful condition, whilst *Callophrys rubi* was worn. *Pararge megaera*, too, was observed, whilst one beautiful *Colias hyale* was captured and another missed. Two other collectors whom I met had a specimen each, so that it is possible that the species will be there again in August. *Pieris brassicae*, *P. rapae*, and *P. napi* were all abundant. A visit to Lady Wood in the afternoon produced exactly the same species as those I captured at Clandon.—C. P. Pickett, F.E.S. *June 6th*, 1903.

VARIATION.

Aberration of Euchloë cardamines.—I took a beautiful aberration of *E. cardamines* at Croydon on May 23rd, 1903. It is 35mm. across the forewings (the smallest specimen taken during the day). The discoidal spot is slightly more pronounced than usual. The usual reddish-orange patch is replaced by one of lemon tint which extends for a hair's breadth over the spot. The ratio of males to females observed on this day was about 25 to 1, the latter flying unattended in the hot sun.—Mervyn G. Palmer, 24, Frindsbury Road, Strood, Kent. *June 4th*, 1903.

Note on the variation of Papilio machaon in relation to its foodplant.—Some examples of *Papilio machaon*, turned loose in Surrey, last June, laid ova on *Skimmia oblata*, a plant only introduced from China and Japan some thirty years since. Some hundred larvæ were brought to me, and they all fed up greedily on the shrub in question, often, indeed, leaving carrot, which I grew at its side, to feed on it. I am trying experiments on a large scale with it this year, as I wish to find out if *P. machaon*, which I have been told feeds on Skimmia in Japan, though I cannot verify this statement, will vary towards its far eastern relations if fed here for some generations.—CECIL FLOERSHEIM, Farrar's Buildings, Inner Temple, E.C.

ABERRATIONS OF PIERIS BRASSICAE.—Referring to the note (*anteà*, pp. 167-168) regarding a male *Pieris brassicae* with a small black dot in the centre of the forewings, I may say that I have bred one this year from a batch of larvæ found in my garden, in September, 1902. I have also a female with the left hand forewing with a decided hook tip as in *Platypteryx hamula*, the black markings being very deep in colour. Another female from the same brood has the black markings replaced by a brownish-black tint.—C. P. PICKETT, F.E.S. *June 6th*, 1903.

SCIENTIFIC NOTES AND OBSERVATIONS.

THE PROBABLE NEW BRITISH NEMOTOIS.—The note by Mr. B. Piffard (*anteà*, p. 162) led me to look, on May 24th, at the two specimens of a species that he refers to the genus *Nemotois*, which he says "greatly resemble *N. cupriacellus*," and which he has deposited in the Natural History Museum for reference. I would submit—with all due respect to the authorities who have, I understand, examined the specimens—(1) That the specimens are nothing like *N. cupriacellus*. (2) That they do not belong to a *Nemotois* species. (3) That they are individuals of a species of *Adela*, and (4) That they are to be referred to the common *Adela rufimitrella*, whose larva feeds on *Cardamine pratensis*, on the blossoms of which plant Mr. Piffard captured his specimens. I do not pretend to know anything about the Adelids now, but I think the above suggestions will prove to be accurate.—J. W. TUTT. *May 31st*, 1903.

PROBABLE NEW BRITISH NEMOTOIS.—With regard to Mr. B. Piffard's note (*anteà*, p. 162), under the above heading, I had the opportunity, last week, of critically examining two specimens of the species to which it refers, and found them to be typical examples of *Adela rufimitrella*, Scop., of which the female has, as he notices, shorter antennæ than the male. It is a well-known habit of the moth to frequent, as observed by Mr. Piffard, the blossoms of *Cardamine pratensis*, which is one of its foodplants. The full life-history of the insect, illustrated with coloured figures of the larva, larval case, imago, and flower-head of foodplant (*Cardamine pratensis*) will be found in Stainton's *Natural History of the Tineina*, xiii., pp. 172-181, pl. iv., figs. 2a-2m (1873).—EUSTACE R. BANKES, M.A., F.E.S., Norden, Corfe Castle. *June 10th*, 1903. [We are pleased to have the independent testimony of so excellent a lepidopterist as Mr. Bankes as to the accuracy of our conclusions.—ED.]

OBITUARY.

THE REVEREND THOMAS ANSELL MARSHALL.—The death of the Rev. Thomas Ansell Marshall, M.A., F.E.S., which took place on April 11th, 1903, at Ajaccio, Corsica, has been duly noted in the *Ent. Mo. Mag.* for May, and an obituary notice appeared in the June number of the same magazine. By that it will be noted that he was 76 years of age on March 18th last; and I mention this to show the extraordinary activity he possessed, for, during last summer, he ascended many of the mountains that abound in Corsica to study its fauna. His companion invariably was his devoted sister, who is only about three years younger than himself, who was much interested in the flora. In these ascents they thought little of remaining on the mountains for the night, taking shelter in some goatherd's hut, if one could be found, thus giving him an opportunity of obtaining some good specimens. In these excursions he did not confine himself to any particular order, as he was a good all-round entomologist; he knew what to reject so as not to burden himself with useless objects. His Corsican collection of insects must be very valuable to persons studying the European fauna. His monographs of the British *Braconidae*, published by the Ent. Soc. of London, and the European, by André, in the "Spécies des Hyménoptères d'Europe," will be much valued by future students. How far he has proceeded with the European *Oxyura* I do not know. This most difficult group of small insects he has been working at for the past four years, and no doubt a great number of figures have been drawn. He once remarked to me that he never knew of a man who had undertaken a big work live to see it finished, and this is certainly his case. His drawings of insects are very carefully done, he was certainly a pastmaster with his pencil and brush. I have four water-colour drawings before me now of birds drawn for a bazaar in aid of church funds. These are a jay, woodcock, kingfisher, and magpie, all in natural positions, the largest not three inches in length. Although drawn so small, they are simply perfect in form and colour. In the woodcock the variegated feathers of the wing are a study in themselves; the kingfisher, on the brink of a running stream, with a small fish in its mouth, is very characteristic of the bird; and so are the others in their attitude. An engraving or etching that attracted his attention, if he took a fancy to it, he could reproduce with such accuracy that it would be almost impossible to say which was the original. As a scholar he could read most of the European languages, and was, in his younger days, engaged at the British Museum, cataloguing the Sanskrit and other works. This sedentary life was against his restless nature. Leaving this appointment, he took Holy Orders and became one of the masters of Cheltenham College, and afterwards one of the principals of Milford College. Subsequently he held various livings in England. He was desirous of visiting the West Indies, and obtained an appointment as bishop's chaplain at Antigua. There he had the misfortune to lose his wife from fever, and himself narrowly escaped death from the same cause. Shortly after his recovery he returned to England. In 1889, he became rector of Botus Fleming, Cornwall, retiring from that in 1897. He finally settled in Corsica, taking lodgings shortly after his arrival in the island at Tavera, afterwards removing to Ucciani, villages in the mountains, finally settling near Ajaccio, there taking a house, with garden and vineyard attached—an ideal home for such a lover of nature as he was. A few days before last Christmas he was taken ill with influenza of a rather mild type; it then developed into bronchitis, followed by asthma, from which he did not recover. He still worked on arranging his MS. up to a very short time before he was summoned to join the great majority—to the regret of his many friends—in the spring of this year.—G. C. BIGNELL, Saltash. *June 4th*, 1903.

CURRENT NOTES.

At the meeting of the Entomological Society of London on May 6th, 1903, Mr. Willoughby Gardner exhibited nest cells of *Osmia xanthomelana* from Conway, North Wales. He said the *species, one of our rarer* mason-bees, places its beautifully constructed pitcher-shaped cells at the roots of grass, usually four or five together. There is no previous record of the nest having been found since Mr. Waterhouse discovered and described it from Liverpool about 65 years ago.

At the same meeting Mr. A. J. Chitty exhibited a water-beetle new to Britain, *viz.*, *Hydroporus bilineatus*, Sturm., discovered by Mr. Edward Waterhouse among some specimens of *Hydroporus*, given by Mr. Chitty to him as *H. granularis*. The specimens were taken at Deal, in 1891, and probably all records of *H. granularis* from Deal relate to this species. He also exhibited a specimen of the rare *Trechus rivularis* (*incilis* of Dawson), taken at Wicken Fen in August, 1900.

At the same meeting Mr. O. E. Janson exhibited specimens of *Neophaedimus melaleucus*, Fairm., a goliath beetle from Upper Tonkin, and remarked that the white colouring was derived from a dense clothing of peculiar semi-transparent coarse scales, which were apparently easily removed by abrasion, and seemed to partake of the nature of the "fugitive" scales found upon freshly-emerged specimens of *Hemaris* and other lepidoptera.

At the same meeting Professor E. B. Poulton showed a specimen of *Polygonia c-album* in the attitude of prolonged repose, together with specimens of *Anaea morris* set in different ways to illustrate its probable resting-position. He said that probably the "C" or "comma" on the undersurface of the hindwings in butterflies belonging to the genus *Polygonia* represents, in bright, strongly-reflecting "body-colour," the light shining through a semi-circular rent in a fragment of dead leaf, the rent produced when a little segment of leaf has broken away along a curved line, but still remains connected with the rest across the chord of the arc. Unless such a segment remains precisely in the plane of the leaf—or even then when shrinkage has taken place—light may pass through a curved and often a semi-circular slit-like window. Such curved cracks, probably produced by alternate wetting and drying, are very common in dead leaves.

Some time since we published an excellent paper by the Rev. C. R. N. Burrows on "*Phorodesma smaragdaria*." In the current number is a parallel paper on "*Phorodesma bajularia*." The next species on the list is *Geometra papilionaria*, and Mr. Burrows asks for eggs, larvæ (of all ages) and pupæ of this species, for figuring and description. We trust that he will obtain an abundance of material.

A meeting of the Entomological Club was held at 58, Kensington Mansions, S.W., on May 25th, when Mr. H. St. J. H. Donisthorpe was the host. The members and their friends were received by Mr. and Mrs. Donisthorpe, and after tea had been served, an adjournment was made to Mr. Donisthorpe's "Museum," where the business part of the meeting was transacted and where the experiments which Mr. Donisthorpe is making with regard to ants' nests and their inhabitants were carefully explained. A return was made later to Mr. Donisthorpe's residence, where a goodly company sat down to an excellent supper at 9 p.m. Amongst others, we noted Prof. E. B. Poulton, Messrs. R. Adkin, A. J. Chitty, E. N. Donisthorpe, E. A. Smith, J. W. Tutt, G. H. Verrall, E. Waterhouse, Colonel Swinhoe, etc.

We are glad to learn that M. Meinert (notwithstanding the appearance of his obituary in a contemporary) is not only alive, but *going well*, and recently celebrated his seventieth birthday with much *éclat*. We wish our distinguished colleague long life and happiness.

Subscriptions for Vol. XV are now over due.

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EXCHANGE BASKETS.—March 14th, 1903, No. 1 basket.—Major Robertson, Messrs. Fox, Lofthouse, Studd, Riding, Day, Bower, Horne, Bowles, Mera. No. 2 basket will be retained till end of June. [Members who wish to be missed must write to the name preceding their own on list, not to the Secretary]. The names of one or two new candidates for admission would be welcomed and room made as opportunity offered.

Duplicates.—Larvæ P. populi. *Desiderata.*—Other larvæ, ova, &c.—*(Miss) E. Miller, The Croft, Rainsford Road, Chelmsford.*

Duplicates.—Pupæ: Moneta (wild). Imagines: Advenaria. *Desiderata.*—Numerous—larvæ, pupæ, or imagines.—*Harold E. Wrusser, Kent House, Cranleigh, Surrey.*

Duplicates.—B. quercus*, Porcellus*, Opima (dark *var.*)*, Advenaria, Deplana, Aureola, larvæ, pupæ, and imagines of P. moneta, ova of Advenaria. *Desiderata.*—Pupæ, larvæ and ova of many species.—*T. W. King, Purbrook, Dorking.*

Desiderata.—During the season—Ova, larvæ, pupæ, and living imagines of many species. Good exchange.—*H. W. Head, Scarborough.*

WANTED.—I shall be deeply obliged to any kindly disposed entomologist who may have the opportunity, if he will secure me ova, larvæ, or pupæ of Geometra papilionaria this season.—*(Rev.) C. R. N. Burrows, Mucking Vicarage, Stanford-le-Hope, Essex.*

WANTED.—Ova, larvæ and pupæ of many species, all the year round. Can offer many larvæ, pupæ, &c.—*E. Morris, Brockenhurst, New Forest.*

WANTED COLEOPHORIDS.—As I wish to breed and record the life-history of all the species of *Coleophora*, I should be pleased to receive any cases and living larvæ which entomologists may meet with. I will do what I can in return.—*Hy. J. Turner, 13, Drakefell Road, St. Catherine's Park, Hatcham, S.E.*

WANTED (during spring and summer).—Living *wild* ♀s Atalanta, Cardui, Io, Sinapis, Cardamines, C-album, Egeria, Lucina, Rubiginea, Semibrunnea, Petrificata, Miata, Psittacata and Derivata, also larvæ of Repandata and Aurinia from all British localities (except Carlisle and Westmeath), especially Scotch and Welsh, Castrensis, Quercifolia, Interjecta, Xerampelina, Diffinis, Festucæ. Liberal exchange.—*L. W. Newman, Bexley, Kent.*

WANTED (to figure).—Examples of the following larvæ, fullfed: Antiopa, Lathonia, Daplidice, Edusa, Hyale, Livornica, Pinastri, Celerio, Gallii, Euphorbiæ. Will any lepidopterist who collects abroad kindly remember my wants when opportunity occurs of obtaining any of them?—*J. C. Dollman, Hove House, Newton Grove, Bedford Park, W.*

EXCHANGE.—I am desirous of obtaining butterflies from the Malayan Archipelago and the Pacific Islands. For such I offer perfect diurnals from North and South America; North American Coleoptera.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

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HERTFORDSHIRE COUNTY MUSEUM, ST. ALBANS.—A collection of British Lepidoptera is being formed. I shall be thankful if collectors will send me any duplicate specimens they may have to spare. Hertfordshire insects will be specially welcome.—*A. E. Gibbs, Hon. Curator, Kitchener's Meads, St. Albans.*

ALBERT MEMORIAL MUSEUM, EXETER.—Collectors of British Lepidoptera are asked to kindly give any spare Devonshire duplicates they may have, to assist in the formation of a local collection. Duplicates in other Orders also desired.—*F. R. Rowley, Curator.*

PARASITICAL DIPTERA WANTED.—Will lepidopterists who may breed any dipterous parasites from larvæ or pupæ kindly forward such as they do not require to me? If so I shall be greatly obliged.—*C. J. Wainwright, 2, Handsworth Wood Road, Handsworth, Staffs.*

CHANGE OF ADDRESS.—*V. Eric Shaw* to *20, Salisbury Road, Bexley, Kent.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W. 8 p.m.—Meetings: October 7th, 21st; November 4th, 18th; December 2nd. Annual Meeting, January 20th, 1904.

The City of London Entomological and Natural History Society. — London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m. Members are particularly requested to bring varieties and aberrations for exhibition. Non-members cordially invited. Exhibits invited at each meeting, especially those illustrative of the discussion, &c. Members wishing to contribute "Communications" are asked to inform one of the Secretaries.

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m.—Hon. Sec., G. E. Shaw, 22, Baythorne Street, Bow, E. Monday, July 6th, probably a paper on "Flies," F. Morice. No meeting in August. Excursions.—July 12th, Merstham; Cannon Street, 10.25 a.m.; return, 2s. July 18th, Bromley for Hayes and Keston; Holborn Viaduct, 2.37 p.m.; return, 1s. July 26th, Woking to Windsor; Waterloo, 9.55 a.m.; return, 2s. 6d.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. June 6th, Field Meeting at Horsley, S.W.R.; leaders, W. J. Lucas, B.A., and R. South, F.E.S.

North London Natural History Society, Sigdon Road Board School, Dalston Lane, N.E. (close to Hackney Downs Stations, G.E.R.).—Meetings second and fourth Tuesdays in each month, at 7.45 p.m.

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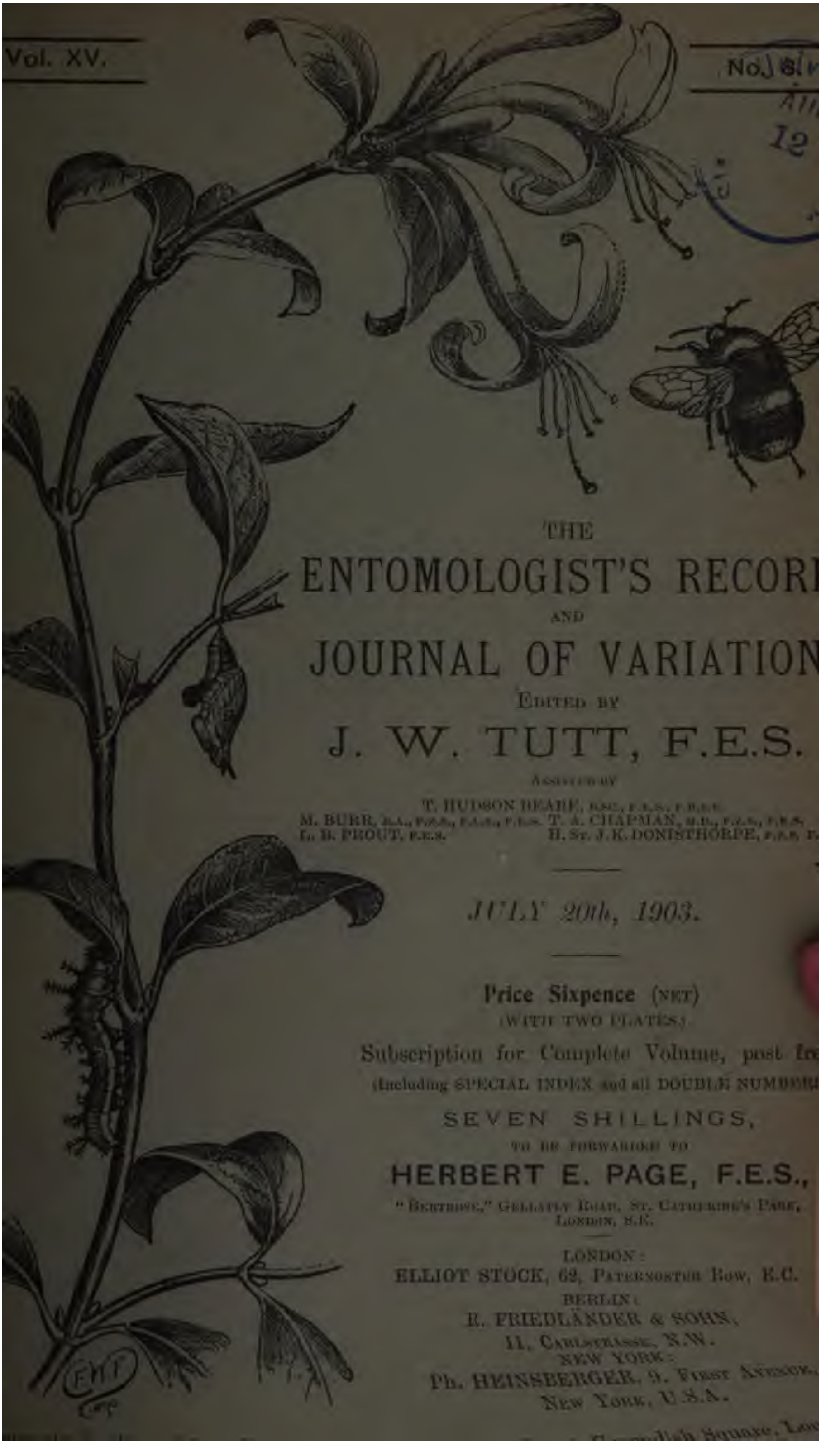

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M. BURR, B.A., F.Z.S., F.L.S., F.E.S. T. A. CHAPMAN, M.D., F.Z.S., F.E.S.
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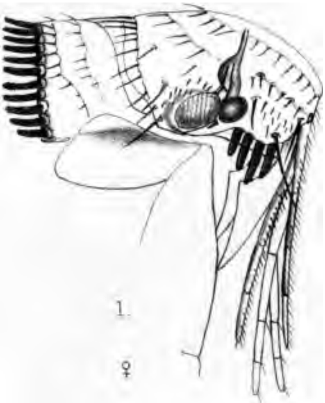

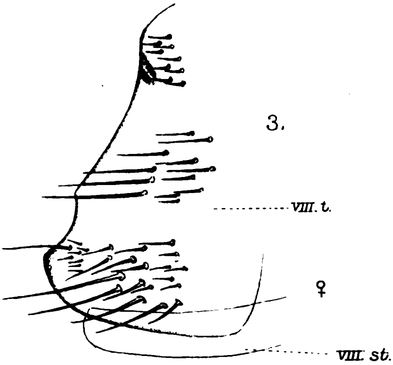

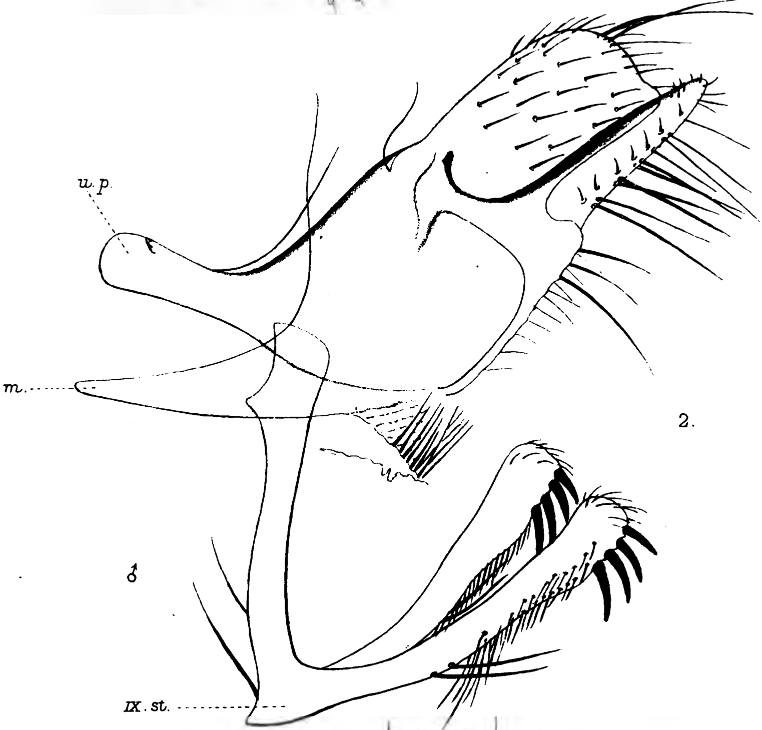

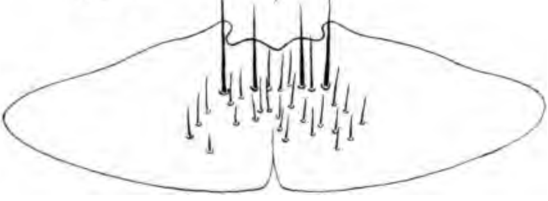
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K. Jordan del. West, Newman lith.

Typhloceras poppei, Wagner.

Entom. Record. etc., 1903.

DIGNE.

Lepidoptera at Pont-du-Gard and Digne (*with plate*).

By W. G. SHELDON.

The morning of April 23rd broke grey and gloomy; as I stood dressing, a glance out of the window announced it was a day, of which, alas, we get so many during the spring in this country of ours. The grass on the lawn was white with hoar-frost, the east winds and frosts had cut the roses back to the quick, until they showed brown and scorched, as though recently passed through a flame; my solitary fruit-tree was shrouded in a wrapping to prevent utter barrenness during the coming summer. Twenty-four hours later I descended from the train at the little Languedoc town of Remoulins; the low pitched, red pantile roofs, the brilliant stucco walls, with green venetian shutters to the windows, and the olive-trees and vineyards, announced a change, indeed, of scene and climate, apart from the glorious blue sky, the hot sun, tempered, however, with a cooling breeze, the atmosphere heavy with the perfume of innumerable flowers, whitethorn in full bloom, and the vegetation generally as forward as we are accustomed to see at the end of May in England. My destination, of course, was the low range of hills that stretch from Remoulins to Pont-du-Gard, and my especial quarry, the "Glory of Provence," *Euchloë euphenoides*, and the not less brilliant *Gonepteryx cleopatra*.

Pont-du-Gard is, indeed, a grand locality for *E. euphenoides*, the males of which may be netted in numbers flying wildly along the small lateral valleys, and I had no difficulty in obtaining in the course of a couple of hours as many as I required. Females were, however, as usual, very scarce, and only four were secured; ova were not uncommon on the yellow flowers of the foodplant, *Biscutella didyma*. I collected a number, and tried the larvæ upon every English plant allied to *Biscutella* I could find, but, although they nibbled *Alliaria officinalis* a little, they did not survive long, and my attempt to rear them ended in failure. I was rather disappointed with *Gonepteryx cleopatra*, which I expected to see in dozens; about a dozen were seen altogether, and not a cabinet specimen amongst them—probably the species was nearly over. The commonest butterfly was undoubtedly *Callophrys rubi*, one or two of which were on nearly every bush. *Polyommatus baton* was not common; probably it was over. *P. astrarche* and *Cupido minima* were in fine condition and numerous. One *Nomiades melanops* only was seen—a small male. *Pontia daplidice* and *Anthocaris belia* scudded along at the base of the hills in some numbers; they are difficult to distinguish in flight. *Euchloë cardamines* and *Leucophasia sinapis* were both well out and common; *Melitaea cinxia*, a fine form, much more tawny than our own, was not infrequent, and was in good order. I was much pleased to get the yellow southern form, var. *intermedia*, of *Pararge egeria* for the first time, commonly in the glades, where also flew specimens of *P. megaera*. I spent two most enjoyable days at Pont-du-Gard; the difficulty in working the ground, however, somewhat reduced one's bag. I stayed at Nîmes, some 12 or 14 miles distant, nearer than which I do not think there is a suitable hotel, the train service between Nîmes and Remoulins is very poor, one cannot well get on the ground much before 10.30 a.m., and it is necessary to leave by 2 p.m., unless one cares to wait for the late evening train.

On April 26th, I started on a long cross country journey from Nîmes to Digne, where I had arranged to meet Mr. E. F. S. Tylcote, for a fortnight's collecting. The distance as the crow flies cannot, I suppose, be much over 100 miles, but this involved ten hours' travel, and half-a-dozen changes of train. The first sight of Digne was, to me, somewhat appalling; I had pictured to myself from the map, a town situated at the junction of several valleys with low and gently sloping sides; as we walked along the bottom of one of these valleys the next morning, I rapidly realised that my preconceived ideas were not on all fours with the reality, and that, if specimens were wanted, hard work must, of necessity, be entailed. The sides of the ravines, for one cannot well call them anything else, are not the easiest of collecting ground by any means; most of them rise up, almost sheer, for a thousand feet or so, and are crowned by utterly unclimbable cliffs.

My emotions on arriving at what had been described to me as *the* best spot for *Thais medesicaste* will not be soon forgotten, and, after viewing it from all available points, I began to think my kind informant had been having a little joke, for there did not seem a possibility that an animal less fitted for climbing than a goat could scale those rocks; one finds, however, on actually experimenting, that the slopes are rugged and broken, and that, when properly shod, one can get about with comparative ease almost anywhere. The accompanying plate will give a fair idea of the district. The hill behind the town is known as La Collette, and is very good ground, the valley in the centre contains the "Les Dourbes" road, whilst the flat range of mountains in the background is "Les Dourbes" chain; it is the especial haunt of the rare *Erebia scipio*, and many other good species. The valley containing the baths, possibly the best ground near Digne, runs laterally out of the Dourbes valley to the right. The species occurring at the time of the year of my visit are so fully dealt with by Mr. Tutt (*Ent. Record*, ix., p. 221), that I shall not attempt to go into details of the majority. The season was a very backward one, and many species that we might have expected to obtain in numbers were thus either not out, or only justemerging.

One of the first objects of our search was *Erebia epistygne*. This fine species was flying in some numbers on one of the smaller hills forming the side of the valley of the Eaux Chaudes torrent, and was met with in single specimens on most of the lower hill-tops we visited; it is a handsome species on the wing, the pale blotches showing conspicuously, and these, in conjunction with its method of flight, give it a very Satyrid-like appearance.

Probably the best insect occurring at Digne in the spring is *Anthocaris tagis* var. *bellezina*, which is hardly to be found elsewhere; it is apparently always rare, four or five specimens being considered a good day's work. The best method of obtaining the species appears to be to climb to the top of the mountains immediately round the town, and to stand in wait at the edge of the cliffs, with which most of them are crowned. *A.* var. *bellezina* is usually to be seen flying up and down along the face of the rocks, which themselves are quite unworkable, and occasionally coming within striking distance.

Leucophasia duponchelii was not common, three or four specimens each day constituted our bag, probably the species was not fully out. I obtained a good series of *Nomiades melanops*, including one or two good underside aberrations; it appears to vary more than any species of the Lycænidæ with which I am acquainted, hardly two specimens being spotted alike, and some had the spots quite radiated. *N. cyllarus* was the commonest blue seen, and varied much in size, my smallest specimen having a wing expanse of barely one inch, whilst the largest one was over an inch and three-eighths, a good proportion of females were netted. *Erebia evias* was not common, local, and in splendid condition. *Melitaea aurinia* was taken freely, all of the *provincialis* type.

Naturally, one of the chief objects of our visit was *Thais medesicaste*, once occurring in the greatest abundance, but now, alas, so far as Digne is concerned, sadly reduced in numbers; it still occurs on most of the hills surrounding the town, but in very small numbers, in fact, by hard working, one cannot expect to obtain more than three or four specimens in a day; accordingly one has to go a considerable distance from Digne in order to see it in any abundance. A day's expedition we made will always rank in my memory as one of those red letter days, which come few and far between in the life of most of us. The locality is one of the most romantic I have ever seen; imagine a gorge with sides 1200ft. to 1500ft. high, the lower 1000ft. of which is formed of steep slopes, the upper portion of cliffs unscalable; down the centre runs a turbulent mountain stream, and a road which, in many places, has been cut out of the solid rock; the gorge just here has taken a sudden turn, hiding the outlets, and giving it the appearance of a volcanic crater, reminding one forcibly of Max Pemberton's "Impregnable City." The slopes were at the time covered with wild lavender, rosemary, and many other flowering plants of whose names I am ignorant, amongst which grew the foodplant of *Thais medesicaste*, *Aristolochia pistalochia*, in great patches. Here and there a peasant pruned his olive-trees, or planted his corn, whilst above all the hot southern sun poured down its beams, making the whole place, even at this early period of the year, a veritable oven. Such a spot is an ideal one for *Thais medesicaste*, beautiful denizen of a southern clime, here at its northern limit, and compelled to choose the warmest and sunniest spots for its habitat. At the first sight of the insect on the wing, somewhat of a disappointment rises in one's mind; there are no brilliant masses of colour here, nothing in this respect to compare with the flame-like *Gonepteryx cleopatra*, or the not less brilliant *Euchloë euphenoides*, only a dull grey creature, with a flight as much like *Pararge egeria* as anything I can call to mind, but presently, after gently flying to and fro, *Thais* will settle on the ground, or on a low plant or flower, and then one realises at once all its charm, that glorious wealth of crimson, and cream, and jet black, and the delicate lacelike beauty of design, of certainly one of the most beautiful European butterflies. I searched for ova, and did not experience any difficulty in obtaining sufficient for my purpose, together with a few small larvæ; the ova are deposited on the leaf or stem of the foodplant, usually singly, but occasionally two or three will be found on the same plant; my larvæ fed well on potted plants, and I already have several pupæ and other larvæ full-fed. I brought home a few full-grown larvæ of *Aporia crataegi*, the imagines of which emerged a week ago, and also some larvæ of *Aglais urticae*, which produced imagines from June 12th to 20th.

The species seen or taken at Digne numbered 46 and were as follows: *Syrichthus sao, Nisoniades tages*, Callophrys rubi, Chrysophanus *dorilis*, *C. phlaeas*, *Polyommatus baton*, *P. astrarche*, *P. icarus*, *P. bellargus*, *Nomiades cyllarus*, *N. melanops*, *Cupido sebrus*, *Everes argiades* var. *polysperchon*, *Papilio podalirius*, *P. machaon*, *Thais medesicaste*, *Aporia crataegi* (larvæ), *Pontia daplidice* var. *bellidice*, *Anthocaris belia*, *A. tagis* var. *bellezina*, *Euchloë euphenoides*, *E. cardamines*, *Pieris rapae*, *P. brassicae*, *P. napi*, *Leucophasia sinapis*, *L. duponchelii*, *Colias hyale*, *C. edusa*, *Gonepteryx cleopatra*, *Polygonia c-album*, *Eugonia polychloros*, *Pyrameis atalanta*, *P. cardui*, *Aglais urticae* (larvæ), *Melitaea cinxia*, *M. aurinia* var. *provincialis*, *M. phoebe*, *Brenthis dia*, *Argynnis lathonia*, *Pararge egeria*, *P. megaera*, *Coenonympha pamphilus*, *Erebia epistygne*, and *E. evias*.—June 26th, 1903.

A New British Flea: Typhloceras poppei, Wagner (*with plate*).

By the Hon. N. C. ROTHSCHILD, B.A., F.L.S.

Dr. Wagner* has recently described a very remarkable flea from a single female specimen sent to him for examination by Herr A. Poppe, taken on March 15th, 1898, at Vegesack, near Bremen. The insect in question has been very properly placed in a new genus, of which it is the only known representative. Some years ago the late Dr. Nitsche, of Tharandt, Saxony, forwarded us a female specimen of this insect for identification. Although we informed Dr. Nitsche that it was quite new, he never described it. We have since received several specimens of this very peculiar insect, a list of these being appended. Among them are several males. In the present article we are recording this species as new to Great Britain, and also take the opportunity of describing the hitherto unknown male, and figuring some of the more important portions of the exo-skeleton of both sexes. Dr. Wagner points out that the present species is related to both the genera *Ceratophyllus* and *Typhlopsylla*. The insect, however, is more closely related to the members of the genus *Hystrichopsylla* than to any other Siphonaptera. *Typhloceras poppei* resembles *Hystrichopsylla talpae* in the following characters. The spines placed on the lateral portions of the abdominal tergites are far nearer the stigmata than they are in other genera. The apical hairs on the 7th tergite of both sexes resemble in their relative sizes those placed in the same position in the genus *Hystrichopsylla*. The clasper-like portion of the 9th tergite of the male is modified (fig. 2), being produced in the centre to form an unpaired process (u.p.), which character is, as far as we know, present only in the genus *Hystrichopsylla* among British Siphonaptera. The distal end of the 9th sternite in the male (fig. 2, ix. st.) greatly resembles in respect to the short chitinous spines placed thereon this portion of the exo-skeleton of *Hystrichopsylla talpae*. The insect under discussion, however, shows some resemblances to members of the genus *Typhlopsylla*, the 8th sternite of the male being large and well-developed as in that genus. This portion, it will be remembered, in *Hystrichopsylla* is reduced in size, while in the genus *Ceratophyllus* it is represented by a narrow strip of chitin. The 9th sternite of the male, moreover, in *T. poppei* is not fused at the distal end, resembling in this character, again, the genus *Typhlopsylla*. In *Hystrichopsylla* the two halves of this portion are completely fused. The relationship shown by *T. poppei* with the genus *Ceratophyllus* is, in our opinion, but a slight one. The two features from which any relationship might be claimed are the presence of a well-developed eye, and the 9th sternite being fused in the centre. The very peculiar head of this species is also reproduced on the plate. In one female specimen, however, there are five genal spines on *one* side.

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* *Hor. Soc. Ent. Ross.*, xxxvi., p. 154 (1902).

So far we have received ten specimens of this very interesting insect, all from the same host, *Mus sylvaticus*, as under:—

1 ♂, Lyndhurst, December 19th, 1900 (G. Tate); 2 ♀, Lyndhurst, December 19th, 1900 (G. Tate); 1 ♂, Whiteparish, Salisbury, August 16th, 1901 (A. Waters); 1 ♂, Drayton Beauchamp, February 28th, 1903 (F. J. Cox); 1 ♀, Drayton Beauchamp, February 28th, 1903 (F. J. Cox); 1 ♂, Pitstone, Bucks., May 6th, 1903 (H. Broad); 1 ♀, Pitstone, Bucks., May 6th, 1903 (H. Broad); 1 ♂, Pitstone, Bucks., May 7th, 1903 (H. Broad); 1 ♀, Pitstone, Bucks., May 7th, 1903 (H. Broad).

EXPLANATION OF PLATE IX.

Fig. 1. Head of *Typhloceras poppei*, ♀.
Fig. 2. Clasping organs of *T. poppei*, ♂.
IX. st. = 9th sternite; u.p. = unpaired process; m. = manubrium.
Fig. 3. Eighth abdominal segment of *T. poppei*, ♀.
VIII. t. = tergite; VIII. st. = sternite.
Fig. 4. Seventh abdominal sternite of *T. poppei*, ♀, spread out.

The European Orgyias: Their Specialisation in Habits and Structure (*with plates*).

By T. A. CHAPMAN, M.D., F.E.S.

(*Concluded from p.* 171.)

It is in accordance with what Mr. Burrows tells me of the habits of *O. gonostigma*, to find that the structure of the female fully corresponds with the very definite steps it has taken towards specialisation, beyond that attained by *O. antiqua*. *O. gonostigma* ♀, not only does not want to leave her cocoon, as is also the case with *O. antiqua*, but, practically, owing to the outer cocoon, cannot do so, nor has she to lay her eggs with the regularity of *O. antiqua*; we find, accordingly, the first definite step taken in the degeneration of the limbs and especially of the tarsi and of the antennæ. In *O. antiqua* ♀ the antennæ (pl. vi., fig. 7) are certainly short, but they are essentially fairly well-developed antennæ. In *O. gonostigma* (pl. vii., fig. 6) they are not only shorter by a fifth part, but we find already four or five of the basal joints of the flagellum soldered together.

The tibiæ of *O. gonostigma* (pl. vii., figs. 1, 2, 3) are a good deal longer than those of *O. antiqua* (pl. vi., figs. 1, 2, 3), why this is so I do not understand, but it makes more obvious the decline in length of the tarsi, which is very considerable, *viz.*, by one-third. A very noticeable difference between the two species is that, in *O. antiqua*, the chitin of the whole surface is strong and dark, that of the head and thorax with the legs being quite black, whilst that of *O. gonostigma* is quite pale and weak-looking. In this, *O. gonostigma* agrees with all the remaining species. One cannot avoid associating this difference with the exposed life of *O. antiqua* ♀, and the sheltered position in the case of *O. gonostigma* ♀, and of the others in which the shelter consists in never leaving the cocoon. The wings in *O. gonostigma* (pl. vii., figs. 4, 5) have also further degenerated somewhat in size, but still more in structure, the forewing of *O. gonostigma* is a somewhat shapeless flap, whilst that of *O. antiqua* (pl. vi., fig. 4) still retains something of the true shape of a wing.

Passing over for the moment *O. ericae* and its allied species—though they follow most closely on *O. gonostigma*—and taking up *O. aurolimbata*, we find a further very considerable degeneration. The antennæ (pl. iv., fig. 1, and pl. vii., fig. 17, where they are to same scale as those of *O. antiqua* and *O. gonostigma* are represented) are reduced to an extreme degree, being only one-fourth the length of the antenna of *O. gonostigma*, and, though it is still possible to recognise that it is really constructed of some 20 joints, they are all anchylosed into one piece, except, perhaps, the basal joint may be free, in which case there are two separate pieces. The legs (pl. iv., figs. 2, 3, 4) may be said to be roughly half the length of those of *O. gonostigma*. Their chief feature is the anchylosis of the tibia and all the pieces of the tarsi into one piece in all the legs. The component pieces are still, however, sufficiently marked out to enable one to say that they still constructively exist. They must still necessarily be used in the journey which the moth makes from one compartment of her cocoon to the other. The wings are very much reduced, but still are represented (pl. iv., figs. 5, 6).

When we come to *O. splendida*, we find practically—I may say actually—no trace of antennæ and no remains of wings, unless we dignify by these names some doubtful scars marking their position. The legs are much reduced in length, and the tarsi are obsolete (see *anteà* vol. xiv., pl. i., and pl. v., fig. 16, where it is enlarged 24 times, to be remembered in comparing it with figs. of other species which are enlarged 14 times), rather, perhaps, considering the condition of the anchylosis of tibia and tarsus into one piece in *O. aurolimbata*; what looks like the tibia in *O. splendida* is really the conjoined tibia and tarsus. Though so short and degenerate, they are, nevertheless, comparatively very thick and strong, and provided with robust claws, so that if they are useless for progression, they are very competent for their duty of tearing up the pupa-case and making an opening in the cocoon.

When we consider the curious habits of *O. ericae*, it appears to me that we find them almost as insoluble as those of *O. aurolimbata* before *O. gonostigma* threw light on them, and we must await the discovery of some species with intermediate habits before we can understand them. One can hardly, however, forbear to speculate. *O. ericae* is but little more degenerate (specialised) than *O. gonostigma*; we can hardly, therefore, derive it from *O. aurolimbata*. Still, it is very possible that it is so derived if, for *O. aurolimbata*, we substitute a less specialised ancestor nearer *O. gonostigma*. We have to suppose *O. aurolimbata* making an external opening at the same time that it opens the second cocoon, and then, on passing into the second cocoon, it is in the position *O. ericae* is said to assume. The diaphragm has also to be then omitted. However this may be, the evidence in the case of *O. gonostigma* and *O. aurolimbata* serves to satisfy us that the changes of habits are made gradually and not in any way *per saltum*, and that it must no doubt be the same with *O. ericae*. One structural item exists to render probable the surmise as to the phylogeny of the *habits of O. ericae* hazarded above, and that is, that I have noticed, in cocoons of *Orgyia intermedia* (a local form of the *ericae* group), that, towards the non-emergence end of the cocoon, there are remains of the inner diaphragm. This remnant passes from close to the end of the cocoon to about a fourth (in one case nearly a third) of the way up the other side of the cocoon before merging in the general wall of the cocoon, and so cuts off a separate space behind and beside the place where the cast larval skin lies in the main cocoon. This space is collapsed and useless, and is clearly a mere survival of something; doubtless that something is the outer space of *O. gonostigma*, the second, or ovipositing cocoon of *O. aurolimbata*. *O. ericae* (with *O. splendida*) has, therefore, made the step beyond these, of the moth remaining in the original cocoon, and not going into the new one.

The plates and rods of the ovipositors (figured in pl. iv, pl. vi and pl. vii) show that the rods dwindle as the moth specialises. They are no doubt the chief agents in enabling the muscles to direct the various plates surrounding the outlet, so that the eggs may be placed exactly as desired. We find them accordingly longest in *O. antiqua* (pl. vi., fig. 9). In *O. gonostigma* (pl. vii., fig. 8), they have become much reduced, the first by nearly 30 per cent. (Note that in the figure the ovipositor has been opened on the dorsal, instead of the ventral, line, as in the other specimens, and that the consequent separation of the plates of the 9th segment, as compared with the other figures, is a mere result of this and not a peculiarity of *O. gonostigma*.) The structure suggests that *O. gonostigma* still makes some sort of definite arrangement of her eggs when laying, though not by a long way so distinctly as *O. antiqua* does. In *O. corsica* (*ericae* group; pl. vii., fig. 16) there is a much greater reduction of the first rods, which are little more than a third the length of those of *O. antiqua*, the second rods are still of quite full length, and are, if anything, rather longer in *O. trigotephras*. Has this any relation to the ovipositor having to be extruded from the cocoon? In *O. aurolimbata* (pl. ix., figs. 9 and 10) the first rods are very short, and in *O. splendida* (pl. vi., fig. 12) practically obsolete. The second rods, though short, are still fairly developed. One would conclude that the second rods (9th segment) are necessary in the mere extrusion of the eggs, whilst the first (8th segment) are the chief agents in directing the ovipositor for their accurate placing. This is in agreement with the immense development of the first rods that occurs in the Solenobias and Fumeas, &c. When we observe how great the degeneration of *O. splendida* ♀ is, beyond that of *O. aurolimbata*, much more than the degeneration of that species is beyond that of *O. gonostigma*, we understand that there must be a great gap between them in habits and probably some missing stages in the passage from the one to the other. That we cannot very easily form a picture of these follows as a matter of course, the difficulty being increased by the probability that *O. aurolimbata* is not the starting-point, but some other possibly considerably different form.

When we come to the *O. ericae* group I have no first-hand knowledge of the habits of the species. I, therefore, give here the best account of those I have been able to find.

Of *O. rupestris* I have not been able to obtain any specimens. Those I have had ♀ specimens of are—*O. ericae*, *O. corsica*, *O. trigotephras*, *O. intermedia*, and *O. anceps*. I ought, perhaps, to say rather that I have received specimens under these names. These are represented by *O. corsica*, pl. vii., figs. 9-16. The specimen having been received from Staudinger, is probably correctly named. With regard to these, it is very difficult to say whether they are all one species or no. Leaving out *anceps* (the specimen examined being perhaps of doubtful authority), it is certain that each form just named is a distinct subspecies, and also that they seem to arrange themselves as sets. All have about eighteen joints to the antennæ. *O. corsica*, *O. ericae*, and *O. intermedia* have antennæ about 1·6mm.-1·9mm. long, *O. trigotephras* only about 1mm., though one *O. intermedia* has them only 1·2mm. In all, more or fewer joints are anchylosed, and it would, perhaps, be more correct to say that the amount and position of this varies more from specimen to specimen than according altogether to race. In one example of *O. trigotephras* the joints seem hardly anchylosed at all, in another the six or seven basal joints are fixed, whilst in one all the joints seem anchylosed. In all cases the dorsum shows a somewhat normal aspect so that articulation can be counted, the anchylosis being most advanced ventrally. Snellen von Vollenhoven, in his paper on *Orgyia ericae* (Sepp's *Ned. Ins.*, 2nd ed., ii., p. 206), says: "With regard to the pairing I have observed the following:—The ♀ bores through one side of the cocoon. The opening is very small, and gives her no means of getting out, since she remains sitting inside. The hairs of the ovipositor stick through the opening, from amongst which the long brownish naked tube is projecting. This is continually pushed out and in, in waiting, apparently, for the arrival of the male. The male flutters round restlessly in the sugar glass in which I had placed them till he becomes aware of the female. Now he settles on the cocoon, bends backwards in the direction of the female genitalia, and the pairing follows. The male fertilises several females. I have seen the same male pair with four females consecutively. Egg-laying begins immediately after pairing. First they are laid in the neighbourhood of the opening, some remain sticking to the cocoon, others fall free to the ground. Afterwards the interior surface of the cocoon is closely beset with the eggs. The females died rapidly during the continued existence of the males (in captivity) a mere two or three days after pairing. The eggs hatched in four weeks. 1870."

He says nothing as to what becomes of the pupa-case, and makes no reference to Herr Breyer's statement that the ♀ reverses herself in the pupa-case, and that she keeps on the pupal head-cover, indeed, he describes the head and antennæ of the female in terms showing that this could not have occurred in his specimens. He says it has unpectinated antennæ, and mentions the legs as possessing femur, tibia and tarsi. Dubois figures the females as reversed in the pupa-case, but it is not clear that this is from a specimen and not merely invented from some (Herr Breyer's) description. Rambur writes of *O. rupestris* (*Ann. Soc. Ent. Fr.*, vol. i., 1832, p. 276): "This ♀ does not emerge from its cocoon, through which it advances its anus in order that the ♂ may pair with it. That done, it fills the cocoon with its eggs, which it mixes with down, of which a thick bed encloses the entire mass. After finishing the laying, one has difficulty in finding scraps of its body. M. le Comte de Saporta has observed the same habits in *O. trigotephras*, in the neighbourhood of Aix."

A reference to pl. vii shows how much nearer the antenna in this group is to that of *O. gonostigma* than to *O. aurolimbata*; the latter species is, in fact, in antennæ and almost all other matters of structure, much more degenerate than *O. ericae.* It is only in the cocoon that we find *O. ericae* (at least *O. intermedia*) to have gone further than *O. aurolimbata.* The *O. aurolimbata* cocoon was only a passing phase in *O. ericae,* whilst *O. aurolimbata* adhered to it and degenerated further. The wings are longer in *O. ericae* than in *O. aurolimbata,* and, though the legs of *O. ericae* are much smaller than those of *O. gonostigma,* and have especially small femora, the tibiæ and tarsi are much better developed than those of *O. aurolimbata.*

MEASUREMENTS (IN MILLIMETRES) OF VARIOUS STRUCTURES OF FEMALES OF SPECIES OF ORYGIA.

		Antiqua.	**Gonostigma.**	**Corsica.**	**Aurolimbata.**	**Splendida.**	**Anceps ?**
Antennæ....	length	2·5mm.	2·0mm.	1·9mm.	0·5mm.	0	0
,, ...	joints	19	25 (some anchylosed)	18 (some anchylosed)	2 (19 anchylosed)	obsolete	0
1st leg......	tibia	1·1mm.	1·4mm.	1·0mm.	0·61mm.	0·5mm.	0·4mm.
,, ...	tarsus	1·8	1·2	0·9	0·62		
2nd leg	tibia	1·5	1·6	1·2	0·85	0·5	0·3
,, ...	tarsus	1·9	1·3	1·0	1·0		
3rd leg......	tibia	1·7	2·3	1·3	1·1	0·5	0·4
,, ...	tarsus	1·8	1·6	1·0	0·9		
Forewing ..	length	2·5	1·8	1·0	0·84	nil	nil
Hindwing ..	,,	0·7	0·4	0·4	0·2	nil	
Ovipositor ..	length of 1st rods	1·1	0·75	0·4	0·25	obsolete	
,, ..	length of 2nd rods	1·0	0·90	1·1	0·61	0·7	
Eggs	high	0·8	·75	0·73	1·1	1·2	1·00
,, ...	wide	0·8	·85	0·96	1·37	1·7	1·33

		Intermedia.	**Ericae.**	**Intermedia.** (another)	**Trigotephras.**	**Trigotephras.** (another)
Antennæ ..	length	1·65mm.	1·6mm.	1·2mm.	1·1mm.	1·0mm.
,, ..	no. of joints	17	19		18	18
1st leg......	tibia	0·84mm.	0·84mm.		0·66	
,, ...	tarsus	0·75	0·92		0·78	0·75
2nd leg	tibia	1·20	0·92		0·90	
,, ...	tarsus	0·9	0·92		0·90	1·1
3rd leg......	tibia	1·2	1·5		1·05	
,, ...	tarsus	0·82	1·1		1·00	1·05
Forewing ..	length	1·5	1·2		1·3	
Hindwing ..	,,	?	?		0·55	
Ovipositor ..	1st rod, 8th segment		0·6	0·3		0·75
,, ..	2nd rod, 9th segment		0·9	·75		1·02
Eggs	high		0·77		0·75	
,, ...	wide	0·93	0·95	1·05	1·0	1·1

In the *latter, also, they* are completely anchylosed, whilst in O. ericae all the joints are functionally perfect. We may note that there are only four tarsal joints, the last two being apparently fused together in *O. corsica*, whilst in *O. trigotephras*, though all five joints are present, there is considerable variation as to whether anchylosis shall involve the last two joints, or include one or two more, or even apparently threaten all. *O. intermedia* agrees apparently with *O. corsica* in structure, the tarsi having four joints, without any definite indication of whether one is atrophied out of existence or has united with another. My material, therefore, suggests three divisions of the *O. ericae* group :—

1. *O. ericae*, five-jointed tarsi, antennæ 1·6mm.
2. *O. intermedia*, four-jointed tarsi, antennæ 1·65mm.; *O. corsica*, four-jointed tarsi, antennæ 1·9mm.
3. *O. trigotephras*, five-jointed tarsi (anchylosing variously), antennæ 1·1mm.

The male *O. anceps* I have is possibly correctly named, the female hardly can be. It is very close indeed to *O. splendida*, but differs by having the legs distinctly smaller, the claws rather weaker and the egg also smaller, 1·8mm. wide instead of 1·7mm. This clearly belongs to a race of *O. dubia*, distinguishable from *O. splendida*, but can hardly have a male like the *O. anceps* I have. The habit of retaining the pupal head-covers varies a good deal, I am not aware that *O. gonostigma* ever retains them. *O. ericae* is said to do so. My specimens of the group show that they are frequently retained, but they are comparatively loosely attached and easily come off, so that those without them, probably retained them for a time. The antennæ are so well developed, that one is rather surprised at this habit, the pupal antennæ being very well developed, so that they form projections, by which the whole covering would be easily torn off, such violence is, however, probably never applied within the cocoon. *O. aurolimbata*, with much more degenerate antennæ, does not retain the head-covers, whilst *O. splendida* retains them very firmly, so that they are almost a definite portion of the imago, and it requires some care and trouble to remove them.

EXPLANATION OF PLATE VI.

All the figures are enlarged 14 diameters, except fig. 8.

1, 2, 3. First, second and third legs of *O. antiqua* ♀.
4 and 5. Fore and hindwings of *O. antiqua* ♀.
6. Palpi and maxilla of *O. antiqua* ♀.
7. Antenna of *O. antiqua* ♀.
8. Antenna of *O. antiqua*. Two segments, more enlarged.
9. Ovipositor of *O. antiqua*. Segments cut through on left side and flattened out.
10. Pupal head of *O. splendida*, as removed from ♀ imago.
11. Head of *O. splendida* ♀ showing (?) evanescent antennæ.
12. Ovipositor of *O. splendida* cut through ventrally and flattened out.

EXPLANATION OF PLATE VII.

1. First leg of *O. gonostigma*, ♀ × 14.
2. Second leg of *O. gonostigma*, ♀ × 14.
3. Third leg of *O. gonostigma*, ♀ × 14.
4. Forewing of *O. gonostigma*, ♀ × 14.
5. Hindwing of *O. gonostigma*, ♀ × 14.
6. Antenna of *O. gonostigma*, ♀ × 14.
7. Tip of antenna of *O. gonostigma*, ♀ × 40.
8. Ovipositor of *O. gonostigma*, ♀ × 14 (divided dorsally, of other species ventrally).
9. First leg of *O. corsica*, ♀ × 14.
10. Second leg of *O. corsica*, ♀ × 14.

11. Third leg of *O. corsica*, ♀ × 14.
12. Forewing of *O. corsica*, ♀ × 14.
13. Hindwing of *O. corsica*, ♀ × 14.
14. Mouth-parts of *O. corsica*, ♀ × 14.
15. Antenna of *O. corsica*, ♀ × 14.
16. Ovipositor of *O. corsica*, ♀ × 14.
17. Antenna of *O aurolimbata*, ♀ × 14.
18. Height and width of eggs of (*a*) *O. gonostigma*, (*b*) *O. corsica*, × 20. Compare with fig. 17, pl. v.

Notes on Phorodesma (Comibæna) pustulata, Hufn.* (*with plate*).

By Rev. C. R. N. BURROWS.

(*Concluded from p.* 177.)

I am informed by Mr. Prout that the short series of *Comibaena* (=*Phorodesma*) *pustulata* in the British Museum collection, consists of two examples from Britain, two from Pomerania, one from Stettin, two from Germany and six from Europe, without more exact indication. Variation is very slight, but one or two (notably one of the two labelled "Germany") have the two white lines on the forewings better expressed, the inner one thicker, and very little of the flesh-colour in the pale blotches, practically none in that at anal angle of hindwing. There are 28 other species placed in the genus *Comibaena* at the British Museum, mostly having, more or less, the same type of pattern and colouring as *P. pustulata*, but none, except the following, appearing to be really the near allies of it—*neriaria*, H.-S., from Syria, and its relations *procumbaria*, Pryer, and *ornataria*, Leech, from Japan. The others are natives of various parts of Asia and Africa, two even from tropical America, and one from Fiji. Staudinger and Rebel (*Catalog*, 3rd ed., p. 262) give *neriaria* as a var. of *P. pustulata*, though adding "an sp. diversa ?" and they add as the area of distribution of the type, from "Central Europe, Denmark, southern Sweden, Livonia, Bilbao, Andalusia, north Balkan Peninsula, south Russia, central Taurus region, northern Asia Minor, and ? Armenia," whilst for var. *neriaria* they give "Greece, Syria, southern and central Taurus region and Armenia."

Mr. Prout adds that from the material in the British Museum collection he would decidedly incline to agree with the authorities there in making *neriaria* a distinct species. Staudinger's diagnosis of the insect "maculis testaceis marginalibus deficientibus," may be supplemented by the fact that it is the blotches themselves that are very much reduced, not merely the testaceous parts of them. I have myself examined these specimens and quite agree with Mr. Prout as to the specific distinctness of *neriaria*, which appears to me to be marked by (1) its larger size, (2) its more pointed forewings, (3) the much larger and more distinct discoidal spot, as well as the more restricted spots already noticed. I must acknowledge my indebtedness to Mr. Bacot for the following technical descriptions of the egg, larvæ, and pupæ.

Ovum (Received from the Rev. C. R. N. Burrows, August 6th, 1902): A very flat egg, in outline a short rounded oval with the micropylar end imperfect, as though it had been cut off. The measurements being—length ·9mm., width ·7mm., and thickness about ·8mm. at one end, and slightly less at the other. The surface is covered with a very much raised, but at the same time delicate, cell network, the thin edges of the dividing walls giving the eggs an appearance of being covered with a "bloom." In colour they were, when freshly laid, a pale yellow, but have now assumed a deep, dull, orange shade. The eggs are deeply depressed on both sides, and the cut off appearance of the micropylar end appears to be mainly, if not entirely, due to a similar depression at this end.

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* Read before the City of London Entomological Society, March 17th, 1903.

LARVA: A fully detailed description appears to be unnecessary, thanks to Mr. Burrows' camera drawings, in which the special features will be much more easily understood, than from any account, however lengthy, which I could give. In the first stadium the lateral flange on abdominal segments 1 to 5 is enormously developed, but I cannot detect the spiracles, which must be hidden in, or by, the deep depressions and folds of the skin. The positions of the specially developed hairs, which are presumably used for attaching the fragments which form the coat, very closely, if not exactly, agree with those of the allied *P. smaragdaria.* The primary tubercles, so far as I can ascertain, are arranged thus, i and ii set trapezoidally on abdominal segments, transversely on meso- and metathoracic segments. These bear long hairs on most, if not on all, segments, trumpet-topped. I cannot trace iii on the segments bearing the extremely elevated flange, and I am not certain that I rightly identifiy it on the other segments as a comparatively small tubercle, bearing a small, simple, tapering hair. The long and highly specialised hairs on the flange I identify with iv and v. The large trumpet-topped hair I take to be iv, and the long tapering, somewhat serrated hair shown on the lower edge of the flange, I suppose to be v. On the segments where the flange is not developed, they would appear to be small and inconspicuous simple hairs. Beyond the difference in the shape of the tops of the specialised hairs, and the much greater extent, to which the lateral flange is developed in *P. pustulata*, this species shows a fairly parallel structure with *P. smaragdaria*, with which it also agrees in the shagreened or spicular character of the skin surface. But in the remarkable, development of what Mr. Burrows calls the "battledore" hairs, *pustulata* shows independent specialisation. These hairs, which appear to me to be "flask-" shaped, I take to be secondary characters, and not developments of any existing primary hairs. I see that Mr. Burrows has slightly exaggerated their size in relation to the specialised primaries in his drawing, evidently with a desire to make them more distinct. The fact of their occurrence upon the thoracic and abdominal segments 6 and 7 proves that they are not directly correlated with the remarkable development of the spiracular hairs (iv and v), and the upward shifting of the spiracular flange, and its great development on the 1st to 5th and 8th abdominals. This view is also supported by their absence on the young larva of *P. smaragdaria.* Their purpose presents an interesting enigma. The only theory which occurs to me being that they have a buoyant or balloon-like use, when the larva drops, as it probably does, on a thread, similar to the supposed use of the bulbed- or balloon-based hairs of *Psilura monacha*, *Porthetria dispar*, and some, at least, of the "Footman" larvæ when in their young stage. In the adult larva, the condition of development of the base of tubercle iv into a special process for the attachment of the silk threads is well shown by Mr.

Burrows' drawings, and is similar to, and parallel with, the development in the case of *P. smaragdaria*, the positions in relation to the spiracles being practically identical, all the primary tubercles being present, and the plates covered with spines surrounding the bases of the ventral tubercles on the segments bearing the specialised processes are as in the case of *P. smaragdaria.*

Cocoon: The cocoon is formed on the underside of an oak-leaf, of comparatively few threads forming a very slight silken web covered with a number of bud-sheaths, scraps of oak-leaf, or portions of flowers spun together.

Pupa: An empty pupa-case of a male is 10mm. in length, and 3mm. in width. The surface is rough and dull, rugose, shagreened or spiny, except just below the wing-cases; the dorsal area of the lower abdominal segments bearing numerous scattered flattened spines pointing backwards; on the dorsal area the upper abdominal segments are shagreened, while on the thorax, wing-cases, &c., the surface is much wrinkled or rugose. The spiracles, as in the pupa of *P. smaragdaria*, are large and dark-coloured, and, therefore, very conspicuous. Scars of the large special tubercles are present, bearing short but stout curved hairs, the position of which differs; on the 3rd and 4th segment they are in front of, but on the 5th above, the spiracle. The dorsal tubercle i bearing a small hair, is easily detected on some segments, but it is not nearly so noticeable as in *P. smaragdaria*. A small slip of the hindwing shows below the forewing on abdominal segments 3 and 4. The tips of the leg- and antenna-cases extend to the end of the 4th abdominal segment, jutting out slightly beyond the extremity of the forewings. The anal armature consists of a very few (I think only 4) large, strong, scythe-shaped, spirally-curved hooks, the largest pair being placed centrally. The colour of the pupa-skin under examination is pale umber-brown, mottled with a darker shade of the same colour on the body, and streaked or splashed with a similar hue on the wings. The pupal dehiscence is exactly similar to that of *P. smaragdaria.*

The Lepidoptera of Provence—Grasse, Mouans-Sartoux, Pegomas, Auribeau.

By J. W. TUTT, F.E.S.

The morning of April 5th broke fine and sunny, but with a good deal of cloud hanging about. However, Mr. Bentall, having written me that *Erebia epistygne* was well out above Draguignan, and that a good series had been taken a few days before, Dr. Chapman and I both thought it high time we tried for the species at Grasse. Catching the usual train, which should start from Cannes soon after 9 a.m., we had the misfortune to be delayed some time, and did not arrive at Grasse until nearly 10.30 a.m. Taking the coach up through the town, we soon found ourselves on its outskirts, and, before we reached the rough ground beyond, had captured *Thais medesicaste*, evidently just emerged, *Anthocaris belia*, a very small example, and not much, if any, larger than *A. tagis* var. *bellezina*, whilst a few *Papilio machaon*, *P. podalirius*, and *Colias edusa* were observed, *Euchloë cardamines*, *Leucophasia sinapis*, and *Pararge megaera* were repeatedly seen, and *Pieris rapae* and *P. brassicae* were in great abundance. Out on the rough heather-clad ground leading up to the heights by the pine-trees, where Erebia *epistygne* has its home, *Callophrys rubi* and *Polyommatus baton* were frequently seen, although *Eurranthis plumistraria* was the commonest species, and the Doctor discovered a full cocoon of *Hybocampa milhauseri* on a tree trunk, which was duly cut out. On the same trunks, too, were several *Diurnaea fagella*. A long fatiguing walk brought no other species than a single *Nisoniades tages*, until we crossed the road, that sweeps back in long zigzags here again, and then a few *Nomiades melanops*, newly-emerged, were noted, and, when possible, bagged, but the gully which they frequented was not favourable to their capture, and most of the examples escaped. A couple of specimens of a Psychid species were added by Dr. Chapman to the bag, but, with the exception of *Herbula cespitalis* and one or two other Micros, no other species were observed. At last we reached the pinewood, on the borders of which *Erebia epistygne* has its haunts, and a ♀, not in very prime condition, was disturbed and netted, but no more rewarded our search, on ground where it was generally common, but as it was now well over 1 p.m., the doctor considered that it was rather the time of day than the place that was at fault, and we found nothing except *Callophrys rubi* out in the locality. Things being so slow, lunch was leisurely taken, and then we continued our walk up the rough shaly-looking slopes, which are, however, easier to negotiate than their appearance would lead one to think. Two other specimens of *E. epistygne* got up, one of which the doctor stalked on the rough ground successfully, but the clouds were enveloping the higher parts of the mountains and we were soon involved therein, and the cold misty atmosphere drove everything to cover. At our highest point we found a specimen of *Leucophasia sinapis* at rest, and, on our descent, the doctor picked a ♀ *Panolis piniperda* from a twig of blackthorn covered with blossom, and a specimen of *Xylocampa lithoriza* from an alder trunk, but, even after we had got below the clouds again and into the sun, the insects did not move, and a few more *Polyommatus baton* at rest on the grass-stalks, were all we captured on the way down to the station.

The next day we determined to visit a locality we both knew well, *viz.*, the valley of the Siagne, in the neighbourhood of the picturesque village of Auribeau. Taking train to Mouans-Sartoux, a walk of 20 minutes brought us to the watercourse on the right of the delightful road which leads to Pegomas. *Anthocaris belia*, *Pararge megaera*, *Pieris daplidice*, *Colias edusa*, *Acontia luctuosa* and *Coenonympha pamphilus*, had already fallen to the net, but, along the watercourse itself, *Leucophasia sinapis* and *Euchloë cardamines* (all males) were abundant, and two or three *Thais polyxena* fell a welcome prey. *Callophrys rubi* was here exceedingly abundant, but already worn, and several hybernated specimens of certain Vanessid species were observed, *e.g.*, *Euvanessa antiopa*, *Polygonia c-album*, *Vanessa io*, &c. Back on the road *Euchloë cardamines* was frequent, and *Gonepteryx cleopatra* more beautiful than ever, as it flashed along the roadside and into the woods. Two *Papilio machaon*, seen but not caught, and two *Brenthis dia* were observed, and, farther on by the bridge, *Cyaniris argiolus* was abundant, and then on the *Genista*-covered banks, which were at the time a mass of flowering beauty, *Callophrys rubi* swarmed, but, strangely, only a few *Sesia stellatarum* were observed, whilst a few examples of *Chrysophanus phlaeas* and *Polyommatus baton* were captured, and one *Polygonia egea*, in very poor condition, was netted. We sauntered along to Pegomas, and it was well into the afternoon before we reached the Siagne and began to renew acquaintance with its loveliness. Several *Gonepteryx cleopatra* were netted, but their condition was, even for hybernation, not then prime, beautiful as the males looked on the wing, but the delicate sulphur-coloured ♂ *Euchloë euphenoides*, with its brilliant orange-red tip, was in lovely condition, and the ♀s were busy ovipositing on the *Biscutella didyma*, and eggs were duly obtained. In the meadows here, *Chrysophanus phlaeas*, *Coenonympha pamphilus*, *Nisoniades tages*, *Brenthis dia*, and *Colias edusa* were not uncommon, whilst several *Spilothyrus althaeae*, three *Syrichthus alveus*, and single examples of *S. sao* and *S. malvae* were very welcome. Only two or three *Polyommatus icarus* were seen, one or two *Nomiades cyllarus*, and a single *P. astrarche*. In the usual shady corner that *Pararge egeria* haunts there, one found the var. *intermedia* fairly plentiful at home, but *Anthocaris belia* flew less frequently than usual across the meadows, and *Melitaea cinxia* was not seen at all. Two or three *Polyommatus baton* were all that took the place of the swarms that were on the tall grass by the riverside in the spring of 1898, and only one example of the brilliant green southern form of *Adscita statices* was captured, where at least a dozen were taken in April, 1898. Several *Polygonia c-album* were seen and inspected, but all worn (all, however, were of a dark tint on the underside). I was exceedingly pleased, however, to get several specimens of *Thais polyxena*, although some of the specimens were getting somewhat worn; a single *T. medesicaste* was, however, in first-class condition. In spite of the abundance of *Pieris rapae* and *P. brassicae*, *P. napi* appeared to be scarce; I captured all I thought I saw, and there were less than half a dozen. Among the moths, only *Strenia clathrata*, *Ematurga atomaria*, *Venilia maculata*, and *Panagra petraria* were common, and some good forms of *E. atomaria* ♀s were seen. Only two or three *Adela australis* were observed about the heather blossom. It was on this morning that we made one or two most interesting observations:—(1) As we were going into Pegomas, by the side of the stream that goes under the bridge, in the line of the main road to Auribeau, and not 20 yards from the road, at about 12.30 (noon), I snapped up with the net a brightly-tinted specimen of *Spilosoma fuliginosa* that flew up rapidly and hesitated directly over the bank by my side. Before this was boxed a second one came up in the same way, followed by a third, but, although the doctor at once suspected a ♀, the second ♂ had paired with her before he could drop on his knees to stop him reaching her, and the third, startled, was off before I could net him. No others put in an appearance after the ♀ had paired, nor was another seen, although the doctor found a cocoon with an unemerged pupa under the stone coping of the bridge. The ♀ gave a huge batch of eggs—above 500—which Mr. Bacot has in hand. (2) Larvæ of *Aglais urticae* were hung up under the bridge for pupation, some just changed. One of the latter was at the moment being attacked by a Chalcid, which had her ovipositor thrust into the newly-formed pupa, between the 6th and 7th abdominal segments, and in which she had evidently successfully laid her eggs, as the pupa was full of Chalcid larvæ when examined in early May.

Next day, April 7th, we went to the Esterel, walking from Le Trayas to one of the neighbouring summits called L'Ours. It was a beautifully sunny day but there was a good wind on, and, in spite of the abundance of flowers, there were practically no lepidoptera on the wing. Only six species of butterflies were observed, *viz.*, *Gonepteryx cleopatra* (plenty), both sexes ; *Pararge megaera*, *Pieris brassicae*, *P. rapae*, *Callophrys rubi*, and *Cyaniris argiolus*. A very fine newly-emerged specimen of *Ophiodes lunaris* was taken ; several *Sesia stellatarum* were seen, and there were also many nests of larvæ of *Porthesia chrysorrhoea* observed. It was interesting, however, in the afternoon to watch the ♂ s of *G. cleopatra* flying round the bushes—oak, buckthorn, &c.—investigating the corners and searching for some suitable nook, maybe, in which to pass the night, but if this be the reason, it is marvellous what a long time is spent in the business, for their movements from 3 p.m. till 5 p.m. seem directed to no other purpose. I thought, at first, that they must be searching for a ♀ but came to the conclusion that this was not so. The habit of both sexes when nectar-hunting at the flowers is the same as that of *Gonepteryx rhamni*, and their mode of resting identical.

The 8th, we spent again at Auribeau. On this occasion we left the train at Mougins and walked over the hills to Pegomas. Close by the station we met with *Thais polyxena*, and *Pieris daplidice*, whilst specimens of *Pararge megaera* were frequent in the road, and the rough ground to the right was the home of numerous *Eurranthis plumistraria*. *Coenonympha pamphilus*, *Euchloë cardamines*, *Syrichthus malvae*, *Colias edusa*, *Leucophasia sinapis*, *Pieris napi*, *Cyaniris argiolus*, and *Callophrys rubi* were captured before a quarter-of-a-mile had been covered, and then, in spite of repeated askings, we wandered about the hills close on a couple of hours before we found our way to Pegomas, and captured nothing during the lovely morning of more importance than a few *Pieris daplidice* and *Callophrys rubi*, and, instead of arriving, as I had foolishly hoped, at Auribeau soon after 11 a.m., and in time for a good series of *Euchloë euphenoides*, it was past 1 p.m. before we got to our ground. However, as it was a quite one-sided desire of mine to get the *E. euphenoides*, and the doctor was much keener on getting a knowledge of the surrounding country, the morning could not be considered as in any wise wasted. We found several *Thais polyxena*, whilst *Polygonia c-album* was again frequent, *Pararge megaera* quite abundant, as also was *Colias edusa*. Several *Pieris daplidice* and *Anthocaris belia* were netted, both species, however, in many specimens beginning to show traces of wear, and ♀ *Euchloë cardamines* began to be frequent with the ♂ s. *Leucophasia sinapis*, fine large ♂ s, and very few ♀ s, were not infrequent, but although *Pararge egeria* var. *intermedia* and *Brenthis dia* were more abundant, they were getting worn and scarcely worth taking. On the other hand, *Argynnis lathonia*, small as are all these spring examples, was now on the wing, and a single *Melitaea cinxia* showed that this species was getting ready to appear. *Callophrys rubi* was abundant, but mostly worn, and the single *Nomiades cyllarus* captured was in fair condition ; a few *Coenonympha pamphilus*, *Polyommatus baton* (two only), and a single specimen each of *Syrichthus alveus*, *Polyommatus astrarche*, and *Chrysophanus phlaeas*, were netted. *Euchloë euphenoides* was strong on the wing, and not scarce, but only eight ♂ s and a single ♀ fell to my share. In the midst of our success, about 2 p.m., a heavy thunderstorm began to gather, and so ominous were the clouds, and loud the thunder, that we made for Pegomas. However, the storm (accompanied by vivid lightning and a tremendously heavy fall of hail at Cannes) just missed us, but collecting was over for the day, and the carrier's van took us back to La Bocca, whence we walked into Cannes, the exposed sides of the paths being still piled here and there with hailstones two or three inches in thickness. On our arrival at the hotel we found that M. Bourgeois, of Geneva, had arrived, in order to renew an entomological acquaintanceship which he and the doctor had struck up here some few years before.

On the 9th, Mr. Bentall, who had kindly arranged to pilot us over the Esterel, in his motor, from Agay, met us in the early morning at Agay station, and a most pleasant day was spent. It is remarkable how much more collecting is to be done from the Agay than from the Le Trayas side, and, altogether, this was quite one of the most enjoyable days of the tour. It was perfect from a weather point of view, and everything tended to make a delightful excursion. Besides, the motor enabled us to get over a lot of ground, whilst allowing us to stop at all the suitable places. Quite a long series of *Euchloë euphenoides* was taken, including several females exhibiting a considerable difference in the amount of orange at the tip of the forewings, and the amount of sulphur-shading on the hindwings. *Leucophasia sinapis* was also common, although, strangely enough, not a single ♀ was captured, and not a single *E. cardamines* was seen. A few *Pararge egeria* var. *intermedia* were taken, but *Pararge megaera* was pretty common everywhere, whilst very varied forms of *Pieris rapae* were most interesting, one ♀ with large grey spots and much grey shading being very remarkable. *Anthocaris belia* was occasionally seen and a single *Melitaea cinxia* showed that the species was just coming out. *Cyaniris argiolus* was abundant but going over, whilst around the bushes *Callophrys rubi* was in great numbers. *Nomiades melanops* and *Polyommatus baton* were only in small numbers, but, strangely enough, worn, whilst *Syrichthus malvae*, *Polyommatus astrarche* and *Chrysophanus phlaeas* were also now putting in an appearance. Two or three fine *Papilio machaon* were seen, and one captured. Several hybernated Vanessids were on the wing, of which two or three white-bordered *Euvanessa antiopa* were the most noteworthy, *Pyrameis cardui*, *P. atalanta* and *Vanessa io* also being seen. A ♀ *Spilosoma mendica* was taken on the wing, and her eggs were sent on to Mr. Bacot for further report. On the heathy parts *Eurranthis plumistraria* was abundant, and there were many *Pachycnemia hippocastanaria* and *Venilia maculata*. We were fortunate in getting a nice little series of *Thais medesicaste*, and *Gonepteryx cleopatra* flew everywhere, the males forming, in spite of their being worn, a gorgeous feature in the landscape.

On the 10th, whilst I went again to Auribeau, Dr. Chapman and Mr. Bourgeois paid a visit to the Isle St. Marguerite, to look for *Lozopera deaurana*, of which larvæ and pupæ were found, but they were extremely rare. Very few dead plants of the *Smyrnium olusatrum* could be found, and those largely uninhabited. The plant itself was just coming into flower and was very abundant as usual. Where were the dead stems? On enquiry the doctor found that he was correct in surmising that the inhabitants of the island collect them as fuel, and apparently, perhaps, because they burn more readily, prefer them to the larger, denser, and heavier stems of the *Ferula*, which were left in great numbers. In view of this fact it is not only not difficult to see why *Lozopera deaurana* is so rare, but rather it is hard to understand why it has escaped entire extirpation.

The visit to Auribeau on the 10th added nothing new to the collection. On the way, and just before reaching Pegomas, on the main road from Cannes, I saw a ♀ *Libythea celtis* laying its eggs on *Celtis australis*, but neither eggs nor ♀ were get-at-able. *Euchloë cardamines* was by this time very abundant, and females of *E. euphenoides* were frequently seen on egg-laying intent. The ♂ s, however, kept to the slopes, and only a small proportion of those seen were netted. *Colias edusa* was abundant, as also was *Coenonympha pamphilus*, one very fine ab. *bipupillata* being netted. *Nisoniades tages* was quite frequent, and several *Polyommatus icarus* and *Nomiades cyllarus* were observed, but *Callophrys rubi*, *Cyaniris argiolus*, *Anthocaris belia* and *Brenthis dia* were practically over, only one or two examples being worth keeping of those netted. *Leucophasia sinapis* still produced but few ♀ s; two or three very good *Thais polyxena* were picked up; *Melitaea cinxia* was getting more frequent, and this was all. *Panagra petraria* was still in great abundance among the bracken. I should add that only about a couple of hours were spent on the ground.

Our success at Agay made another visit to the Esterel desirable. That on the 9th had consisted of the round from Agay to Valescure and St. Raphael, on the 11th it was to extend from Agay to Le Trayas. It was another lovely day, and Mr. Bourgeois joined our party. *Gonepteryx cleopatra* and *Euchloë euphenoides* were in great force, and made brilliance everywhere. The ♀ s of the latter species were in none too great numbers, but such as were seen varied immensely in size. One very striking one has so few orange scales at the apex, that the usual orange shading observed in the ♀ s may be said to be absent. Another, taken by Dr. Chapman was quite a giantess of its species, measuring 48mm. A few *Thais polyxena* were picked up in the early morning, but the species was nearly over, and throughout the day's collecting only some half dozen *T. medesicaste* fell to the net. *Melitaea cinxia* was only just appearing; *Pararge egeria* var. *intermedia* well out, *P. megaera* in all the sunny corners, and *Callophrys rubi* in hundreds on the bushes. There were still large numbers, too, of *Cyaniris argiolus*, but the species was going over, and of *Nomiades melanops* only a single example was netted. A few specimens of *Chrysophanus phlaeas* were observed, and besides large numbers of *Pieris rapae* and *P. brassicae* these were, I think, all the butterflies noted, except a single ♀ *Libythea celtis*, which the doctor captured as it was hovering, apparently ready to oviposit, over a small tree, which did not appear to be *Celtis*. A specimen of *Dicranura vinula*, captured on a post just outside Agay station, was in first-class condition. In the late afternoon the only sport we had was provided by *Hemaris fuciformis*, which hung in the sun at the flowers of the southern lavender, that makes these slopes at this time of the year, one blaze of purple, and the moths were on the move even after the sun had gone off the valley leading down to Le Trayas. The only other moths worth noting that were captured were *Pachycnemia hippocastanaria*, on the heaths, and three examples of *Minoa euphorbiata*. This concluded our collecting at Cannes. Next day we moved on and on Monday were prospecting the region around Alassio, on the Italian Riviera.

PRACTICAL HINTS*.

Field work for August.

1.—Larvæ of *Penthina dimidiana* are to be found during August in the spun-together leaves of terminal shoots of *Myrica gale.*

2.—If the patches of *Armeria vulgaris*, growing on salt marshes, are carefully watched on a bright afternoon in August, *Sericoris littoralis* will, in all probability, be seen flying over them in numbers.

3.—Towards the end of this month the larvæ of *Phtheochroa rugosana* are to be found feeding in the fruit of *Bryonia dioica*, which they often attach to the stems with silk. As these larvæ do not pupate until the spring it is expedient to keep them in a cool, and not too dry, place.

4.—About the close of August a careful examination of the leaves of various species of *Salix* may result in some being found drawn together at the edges, so as to form a pod-like chamber. These leaves should contain the active larvæ of *Phoxopteryx biarcuana.*

5.—From the middle of the month *Semasia spiniana* may be captured flying over whitethorn in the bright sunshine. Its time of flight commences about midday and lasts well into the afternoon. By stooping down by a close-cut hawthorn hedge, so as to get a clear view of the moths against the sky as they fly along, great quantities are sometimes to be obtained.

6.—A visit to some grassy spot, from noon to 2 p.m., on a sunny day about the middle of August, is likely to disclose small moths flying amongst the vegetation. These are very likely to prove the local *Ochsenheimeria birdella*, as so it is procured.

7.—The larvæ of *Enicostoma lobella* occur from the middle to the end of August. They are found on the underside of leaves of *Prunus communis* and its cultivated varieties. The larva spins silk on the under-surface of a leaf, which causes it to contract, but not to a very marked extent. Unless great care is exercised in gathering the tenanted leaves their occupiers will be found to have abandoned their homes.

8.—*Psoricoptera gibbosella* occurs towards the end of August, and is best found by searching oak stems. It sits tightly pressed into a crevice in the bark, and when the stems are lichen-covered it is well nigh imperceptible. Under such conditions it may be dislodged by gently blowing on the stems.

9.—Larvæ of *Teleia scriptella* are to be found at the end of August in leaves of *Acer campestre* having a corner turned over. The larvæ occur on the lower shoots of their foodplant, and appear to have a liking for those in close-cut hedges.

10.—From six to a quarter-past seven, on calm and mild evenings throughout August, the imagines of *Lita maculiferella* may be found flying along whitethorn hedges. This species is local, but generally abundant where it occurs.

11.—If the seed-heads of *Dactylis glomerata* are gathered about the middle of August, they will often yield a good supply of larvæ of *Glyphipteryx fischerella.*

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* "Practical Hints for the Field Lepidopterist," Pts. I and II each contain some 1250 practical hints similar to these, but relating chiefly to the Macrolepidoptera. Interleaved for collector's own notes. Price 6s. each part.

12.—Towards the end of August a careful examination of the leaves of *Artemisia vulgaris*, growing on hedge-banks, will most probably result in some being found to have an inflated bladder-like appearance. This is the work of the larva of *Gracilaria omissella.* If the larva is of a rich crimson colour, it is full-fed and about to quit its mine to form its silken cocoon.

13.—Throughout the month of August the larvæ of *Phyllocnistis suffusella* may be found mining the leaves of various poplars; not confining themselves to British species. The mines are very likely to be passed by, as they have a very strong resemblance to the slimy track left by a slug in crawling over a leaf.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

NOTES ON THE LARVA OF CNETHOCAMPA PITYOCAMPA.—A batch of larvæ of this insect was received from Mr. Tutt on April 3rd, which he had taken on March 30th, on a pine tree, in the woods at Carqueiranne. This, I understand, was one of the very few nests observed containing larvæ, although empty nests were in great numbers, and some of the young pines nearly stripped by the voracious larvæ that had by this time disappeared. They were evidently nearly full-fed and seemed very lethargic in their nature, except upon particular occasions, when a very curious action would be indulged in. In length the larva is 1¼in. long, the head large and very lobed in shape, of a dark brown reticulated surface, being also slightly, though sharply, cleft down the centre. In shape the larva is not unlike that of *Lasiocampa quercûs*, though smaller. The head is slightly less in size than the prothoracic segment, after which each segment increases in bulk to the fourth abdominal one, and from there tapers gradually in form to the anal end. Each segment is sharply incised with a jet black band around the body to spiracular line. On each segment is an elongated dorsal patch of short, hairy tufts, chestnut in colour, with a central patch of deep sienna, again containing a lighter central transverse line of chestnut. A subdorsal row of light yellowish tufts exists for the full length. Below this, on each segment, is an elongated patch to the spiracular line, of short light hair with a black elongated centre, containing, near its anterior edge, a red tubercle, set with short stiff and white hairs. The spiracular line is fleshy and projecting, and set thickly with light hair, showing a reddish tendency at each spiracle. These hairs are all directed downwards. The spiracles, which just rest on the spiracular line, are black, set in a white ring. Underneath each is a pink, fleshy tubercle, with white hairs; and underneath this again a similar tubercle on the skinfold of the side of the ventral region, which is glaucous-green in colour. The claspers are light, raw sienna coloured, and shining, with a ring of stout, dark setæ round the feet, which are light yellowish-grey. The larva is very clinging in its hold, and is continually spinning a line when on the move. The examples under observation spent their time almost exclusively clinging together on a web amongst the pine-needles, and fed very little. Allusion has been made to a peculiar action which was resorted to occasionally. It is rather difficult to describe, but it consisted of a lateral movement effected by the first six segments, which were elevated, while the larva clung to the web with its claspers. The movement was a sharp series of infinitely short jerks, delivered quickly after each other, making, perhaps, a dozen of these jerks outwards to one side in quick succession, and then returning in the same manner to develop a like proceeding outwards on the other side, and back again. This exercise was continued for some minutes with all the mechanical precision of a quickly-ticking watch, and did not appear to be associated with any web-spinning process. The larvæ dragged on an uneventful career for some weeks, gradually retreating out of sight in the web, and were found about May 6th, spun up and cocooned together in the bottom of the pot below the residue of pine, &c. On May 15th, one pupa was observed, which had slipped from its bearings in the cocoon clump, where doubtless others had formed. The pupa was small and possibly abnormal in size, not measuring more than $\frac{5}{8}$in. long. It was of a bright sienna colour, stumpy in form, and tapering at each end. The segments were strongly marked, and the spiracular position very accentuated. The anal segment was rounded and contained a lateral pointed projection extending backwards from each side.—J. C. DOLLMAN, F.E.S., Hove House, Newton Grove, Bedford Park, W. *May 24th*, 1903.

EGG-LAYING OF POLYOMMATUS CORYDON.—I have just come across a note written in mid-August, 1900, at Abriès, on the egg-laying of *P. corydon*, and which has been put aside ever since. It reads: "Watched a ♀ *P. corydon* this morning, about noon, evidently intent on egg-laying. She flew to a plant, rested very quietly for a minute or so, moved her hindwings forwards and backwards very quickly for a moment, and then flew off. I am afraid I disturbed her in my anxiety to see the operation, but I picked the leaf and found the egg at once; but, although she only flew a short distance, and appeared to be as keen as ever, I could not get another egg. The egg is very pale green when first laid." The egg, if I remember rightly, was sent on to Mr. F. N. Clark, but he reported it as hatched before he could photograph it. I believe Mr. Frohawk says the egg hybernates. This appears not to be the case, but the fact should be readily tested by Mr. Pickett or some other of our keen south-coast collectors.—J. W. TUTT.

COLEOPTERA.

COCKCHAFERS ON LAKE GENEVA.—My friend, Mr. Govett, sends me the following note, which he desires me to forward to you:—"On June 18th, rowing from Territet to Clarens, I passed through a belt, 20 yards broad, of dead cockchafers, numbering roughly tens of thousands—a phenomenon never observed before. None were seen in the roads or gardens. Were they blown into the lake, or drowned by rain, or frozen higher up the Rhone Valley and brought down by the Rhone? If so, why only this narrow belt of corpses?" He asks whether any of your readers can offer an explanation that suggests a reason for his finding tens of thousands of dead cockchafers in the lake. I have seen none on shore wherever I have been, and it is certainly curious that they should be found in such quantities in the lake. The narrow belt is, of course, the result of the action of wind and current. The sparrows were fishing them out of the lake and eating them on the verandah of the club. I add the local newspaper view of the subject:—"Les hannetons.—On nous écrit de Territet: 'J'ai noté ces jours-ci une quantité énorme de hannetons noyés dans les eaux du lac, près du rivage entre *Montreux* et Clarens. Est-ce qu'un naturaliste

expérimenté voudrait bien expliquer ce fait ?' Nous croyons pouvoir, sans recourir aux lumières d'un naturaliste expérimenté, donner à notre honorable correspondant la raison de ce phénomène. Nous sommes arrivés à la saison climatérique où le hanneton termine son existence aérienne et tombe comme pluie à l'état de cadavre, partout où il se trouve, sur les routes et dans les cours d'eau. Le Rhône valaisan en charrie d'énormes quantités ; arrivés au lac au Bouveret, il n'y a rien d'extraordinaire à ce qu'on les voie rejeter sur le bord des millions d'élytres qui n'ont pas coulé à fond ou continué à descendre le fil de l'eau."—G. O. Sloper, F.E.S., Hôtel Beau-Site, Aigle. *June 23rd*, 1903.

Coleoptera near Peterborough.—Returning from London on June 25th, I slept the night at Peterborough, and managed to get a little collecting on that evening after dinner, and again on the morning of the 26th, before catching the train for Edinburgh. The weather was hot and close, and insects numerous, and a note of the better captures may be of interest. By sweeping the herbage under the hedges in a narrow lane I got *Clytus arietis*, L. ; *Telephorus lituratus*, F. ; *Anthocomus fasciatus*, L. ; *Dasytes plumbeus*, Müll. ; *Priobium castaneum*, F. ; *Homalium florale*, Pk. ; and hosts of *Anaspis*, *Phyllobius*, &c. On the morning of the 26th I beat off aspen, fairly commonly, *Corymbites metallicus*, Pk. ; and swept up off flowers and grass at the side of a wood *Clytus arietis*, L. ; *C. mysticus*, L. ; *Agapanthia lineatocollis*, Don. ; *Toxotus meridianus*, L. ; *Strangalia melanura*, L. ; *Agrilus laticornis*, Ill. ; *Malthinus fasciatus*, Fall. ; *Anobium fulvicorne*, Sturm. ; *Oedemera nobilis*, Scop. (exceedingly abundant) ; *O. lurida*, Marsh. ; *Mordellistena abdominalis*, F. ; *Chrysomela varians*, F. ; *Tanymecus palliatus*, F. ; *Hypera murina*, F. ; *Orobitis cyaneus*, L. ; *Orchestes stigma*, Germ. ; *Apion pisi*, F. ; *A. pomonae*, F. ; and many others. As the morning sun was very powerful after a heavy night dew, the beetles were exceedingly active, taking to wing out of the net with surprising rapidity, and it was difficult to secure such insects as *Mordellistena*. Of the longicorns, *Strangalia melanura* was by far the quickest in flight and in getting into flight from rest ; on this occasion it was much quicker than *Clytus arietis*. During a couple of days at Brockenhurst, at Whitsuntide, I had been much struck with the rapid flight of *Clytus arietis* ; it was as speedy as any wasp, and quite as quick in rising into flight from any flower or piece of timber on which it was resting. In this excited state the resemblance of the beetle to a wasp is most striking, and, in fact, I feel confident that an ordinary observer would have declared they were wasps.—T. Hudson Beare, F.E.S., 10, Regent Terrace, Edinburgh.

NOTES ON COLLECTING, Etc.

A lepidopterological note from the Rhone valley.—The weather up to June 23rd was cold and wet, almost every day, and up to that date there had been no *Melitaea parthenie* nor *M. athalia* at Martigny, yet, strangely enough, *Polyommatus amanda* was nearly over, and *Argynnis daphne* out quite strongly. I took a very large ♀ *Chrysophanus* var. *gordius* at Martigny a few days earlier, and Mr. Wheeler took another of the same size. In answer to your queries I find that my earliest capture of *Cupido sebrus* (a ♂) this year was on May 3rd, my earliest of *Nomiades cyllarus* (also a ♂) was on May 4th. I saw a specimen of *C. sebrus* a day or two earlier, but did not take it; but both Mr. Wheeler and I took both species freely on the Bex road on the 9th, although the females of *N. cyllarus* were very scarce, whilst those of *C. sebrus* were in tolerable numbers, and varied a good deal. *Nomiades semiargus* dated from May 20th, and is in good condition now (July 4th) at Suan, above Corbeyvier, where I took both sexes, together with *Erebia oeme* and *E. stygne*, *Chrysophanus hippothoe*, *Polyommatus eumedon*, &c.—G. O. Sloper, F.E.S., Hôtel Beau-Site, Aigle. *July 4th* 1903.

Lepidoptera at light in the south-east of London.—During the last week, the lamps in the neighbourhood of Blackheath and Lewisham have been visited by a great many common species of moths, amongst which *Spilosoma menthastri* and *S. lubricipeda* seem to be the most numerous, but one or two *Amorpha populi* have been observed, and, most remarkable of all, two *Cossus cossus*, both of which have been captured, and which were not to be named, as they circled about the electric light, at first high up in the air, where they looked very conspicuous, and then suddenly dashing down to the ground, where they were immediately captured.—J. W. Tutt. *July 7th*, 1903.

Amphidasys betularia in south-east London.—Some years ago *Amphidasys betularia* used to be fairly abundant in Greenwich Park, but it is some years since I saw the species in the neighbourhood. This year, however, several have been taken on the trees in the streets at Lewisham, one virgin ♀ thus taken proving that they had emerged in the vicinity.—Ibid.

Larvæ of Plusia chryson at Chippenham.—Towards the end of May my friend Mr. Scott and myself decided to ride on our bicycles to Chippenham Fen, to have a try for larvæ of *Plusia chryson*. We started at 9.30 a.m. on May 24th, a very hot day, and were quite tired when we reached our destination; a short rest under the pines thoroughly refreshed us, and we set to work with plenty of energy. Almost the first plant I searched, yielded a very small larva of the desired species, it was then some time before I found another; however, by means of unlimited patience, combined with plenty of back-bending, we were rewarded by finding more larvæ, and at 2.30 p.m. we mounted our bicycles, with a combined take of 26 larvæ. Netting brought in a few each of the following imagines:—*Phytometra aenea*, *Thera variata*, and *Ematurga atomaria*.—E. Crisp, 31, Union Road, Cambridge.

CURRENT NOTES.

As the Editor is making a "geographical" collection of the European butterflies, he would be obliged if any of the many lepidopterists who collect on the continent will save him a ♂, ♀ and underside of almost any common species in good condition from as many localities as possible. He hopes to use them for descriptive purposes some day.

Whilst Dr. Chapman is in Spain, eggs, larvæ, or pupæ of continental butterflies sent for description should be forwarded to Mr. A. W. Bacot, 154, Lower Clapton Road, London, N.E.

Some of the Berlin lepidopterists appear not to be too friendly disposed towards each other. Bartel and Herz recently published a *Handbuch der Gross-Schmetterlinge des Berliner Gebietes*, which was reviewed by Stichel in the *Berlin Ent. Zeitschrift*, xlvii., pp. 296-299, and in which review the authors think their work was unfairly treated.

This has called forth a reply from the authors, which they have published in pamphlet form, and of which we have just received a copy. One of the charges against them appears to be that they state that they use our arrangement of the Macro-Psychids, as set forth in *British Lepidoptera*, vol. ii, and yet do not logically include the Tineid section thereof. The authors answer this by stating that "Tutt's definition of the genera, and his study and logical application of the nomenclature, were necessarily regarded as being of far greater value than the arrangement adopted therefrom for use in Staudinger's *Catalog*. We therefore applied it so far as it was applicable. We were restricted from using the whole, by the conception 'Macrolepidoptera,' which excludes the enumeration of the Taleporiid and erstwhile Tineid genera, included by Tutt in Psychids, and here, again, Tutt's system is preferable to the older arrangement, and might certainly be taken into consideration in the next edition of the Staudinger-Rebel *Catalog*." One of our greatest present-day regrets is that in our own earlier entomological criticisms, want of thought and training often led us to discuss entomological matters from what often appeared to be a personal standpoint, a mode which can only lead to personal misunderstanding. Criticism is worthless unless it be honest and trenchant, but it is the way of saying things that does mischief. We cannot afford to have hard workers like Bartel and Herz on the one side and Stichel on the other at variance. Lepidopterology can only lose by personal misunderstandings among its best exponents.

All our readers are aware that Messrs. Verrall, Moberly, and others have purchased portions of Wicken Fen, in order that the native fauna and flora may not be exterminated by drainage, etc., from one of its last strongholds in this country. It is with the greatest regret, therefore, that we hear that, on June 7th, some 20 acres, recently purchased by Mr. Verrall, were the scene of a devastating fire that practically destroyed the whole of the herbage on this plot. The destruction of the flora and fauna on the ground must have been complete, but still we have no doubt that the land will soon be stocked again with the native plants and insects, surrounded as it is with acres of yet virgin fenland. The damage done to the wild haunts of many animals and birds by fire, through carelessness, is incalculable. In April last we saw hundreds of acres of the lovely Esterel blazing, and other hundreds of acres blackened ruins. Everywhere "Smokers are forbidden to throw down matches"—posted by the French Government, to whom the Esterel belongs—meets one in this lovely southern paradise ; still the careless throw them down, and fearful damage results. One suspects a "smoker" as the cause of this. We trust that no entomologist who has accepted the permit of Mr. Verrall to collect on his ground was lunatic enough to smoke among such combustible material as the dry herbage of the fen affords. For ourselves, we consider that the man who smokes in a pinewood (and who is sure to throw lighted matches among the needles on the ground), or he who smokes among the dried sedge of fenland, deserves something more than censure.

Our valued correspondent, Mr. W. Reid, of Rondebosch, Cape Colony, having arranged to leave South Africa for a few months' holiday in Great Britain, will be pleased to meet old entomological friends on the field or otherwise, as may be arranged. Temporary address (after July 20th), Pitcaple, Aberdeenshire.

Subscriptions for Vol. XV are now over due.

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NOTICE.—The Editor would like to have the names and addresses of lepidopterists who are willing to rear any surplus ova or larvæ that may come to him, and who will write detailed notes of the species reared for publication. Sometimes eggs and larvæ are received from correspondents which he has no time to deal with, and the knowledge of two or three keen lepidopterists, who would undertake the rearing *and* write their observations, would be at such times very useful.—*J. W. Tutt.*

EXCHANGE BASKETS.—March 14th, 1903, No. 1 basket.—Major Robertson, Messrs. Fox, Lofthouse, Studd, Riding, Day, Bower, Horne, Bowles, Mera. **Will each member please make enquiries about this basket, of which nothing has been heard for some weeks. The last official notice of receipt was from Dr. Riding.** No. 2 basket will be retained till end of June. [Members who wish to be missed must write to the name preceding their own on list, not to the Secretary]. The names of one or two new candidates for admission would be welcomed and room made as opportunity offered.

Duplicates.—Larvæ of Suasa. *Desiderata.*—Larvæ, pupæ, and ova.—*Samuel Walker, 15, Queen Anne's Road, York.*

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WANTED.—Systematic works on the Lepidoptera of South Africa. State price and condition to—*W. M. Reid, Pitcaple, Aberdeenshire.*

WANTED.—I shall be deeply obliged to any kindly disposed entomologist who may have the opportunity, if he will secure me ova, larvæ, or pupæ of Geometra papilionaria this season.—(*Rev.*) *C. R. N. Burrows, Mucking Vicarage, Stanford-le-Hope, Essex.*

WANTED.—Ova, larvæ and pupæ of many species, all the year round. Can offer many larvæ, pupæ, &c.—*E. Morris, Brockenhurst, New Forest.*

WANTED COLEOPHORIDS.—As I wish to breed and record the life-history of all the species of *Coleophora*, I should be pleased to receive any cases and living larvæ which entomologists may meet with. I will do what I can in return.—*Hy. J. Turner, 13, Drakefell Road, St. Catherine's Park, Hatcham, S.E.*

WANTED (during spring and summer).—Living *wild* ♀s Atalanta, Cardui, Io, Sinapis, Cardamines, C-album, Egeria, Lucina, Rubiginea, Semibrunnea, Petrificata, Miata, Psittacata and Derivata, also larvæ of Repandata and Aurinia from all British localities (except Carlisle and Westmeath), especially Scotch and Welsh, Castrensis, Quercifolia, Interjecta, Xerampelina, Diffinis, Festucæ. Liberal exchange.—*L. W. Newman, Bexley, Kent.*

WANTED (to figure).—Examples of the following larvæ, fullfed: Antiopa, Lathonia, Daplidice, Edusa, Hyale, Livornica, Pinastri, Celerio, Gallii, Euphorbiæ. Will any lepidopterist who collects abroad kindly remember my wants when opportunity occurs of obtaining any of them?—*J. C. Dollman, Hove House, Newton Grove, Bedford Park, W.*

EXCHANGE.—I am desirous of obtaining butterflies from the Malayan Archipelago a the Pacific Islands. For such I offer perfect diurnals from North and South Americ North *American Coleoptera.*—*Levi W. Mengel,* Boys' High School, Reading, Pa., U.S.

WANTED.—Erycinidæ of the world. Offer for same Diurni from United States, northern South America and Central America, also North American birds' eggs and American-Indian relics.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

HERTFORDSHIRE COUNTY MUSEUM, ST. ALBANS.—A collection of British Lepidoptera is being formed. I shall be thankful if collectors will send me any duplicate specimens they may have to spare. Hertfordshire insects will be specially welcome.—*A. E. Gibbs, Hon. Curator, Kitchener's Meads, St. Albans.*

ALBERT MEMORIAL MUSEUM, EXETER.—Collectors of British Lepidoptera are asked to kindly give any spare Devonshire duplicates they may have, to assist in the formation of a local collection. Duplicates in other Orders also desired.—*F. R. Rowley, Curator.*

PARASITICAL DIPTERA WANTED.—Will lepidopterists who may breed any dipterous parasites from larvæ or pupæ kindly forward such as they do not require to me? If so I shall be greatly obliged.—*C. J. Wainwright, 2, Handsworth Wood Road, Handsworth, Staffs.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W. 8 p.m.—Meetings: October 7th, 21st; November 4th, 18th; December 2nd. Annual Meeting, January 20th, 1904.

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m. Members are particularly requested to bring varieties and aberrations for exhibition. Non-members cordially invited. Exhibits invited at each meeting, especially those illustrative of the discussion, &c. Members wishing to contribute "Communications" are asked to inform one of the Secretaries.

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m.—Hon. Sec., G. E. Shaw, 22, Baythorne Street, Bow, E. No meeting in August. Excursion.—July 26th, Woking to Windsor; Waterloo, 9.55 a.m.; return, 2s. 6d.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m.

North London Natural History Society, Sigdon Road Board School, Dalston Lane, N.E. (close to Hackney Downs Stations, G.E.R.).—Meetings second and fourth Tuesdays in each month, at 7.45 p.m.

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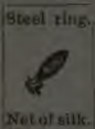
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On two variable broods of Triphæna comes, Hb. [melanozonias, Gmel.]* from Forres.

By LOUIS B. PROUT, F.E.S.

On August 25th and 28th, 1902, I beat, from the roots of marram, &c., on the Findhorn sandhills, about five miles from Forres, two worn females of *Triphaena comes* (*melanozonias*), belonging in the broad sense to the ab. *curtisii*, Newm. Both were so worn that it is impossible to speak with precision of the exact form, but I judged that of the former date, which I shall call "♀ A," to be of the blackish ab. *nigrescens*, Tutt (near fig. D2 *Entom.*, xxii., pl. vi.), and that of the latter to be a little redder, *i.e.*, a true ab. *curtisii* (*loc. cit.*, fig. C2 or D1, or probably between them). Both were kept alive for ova, and each obliged me with a batch of some three or four hundred. The eggs hatched in 10 or 11 days, and the larvæ were pushed forward by keeping in warm places, so as to avoid the necessity for hibernating. As there were many more than I could myself manage, I distributed the overplus among several friends, some of whom unfortunately had little or no success in bringing them through. The following account is based on a study of those which were bred by myself and Messrs. A. Bacot, W. J. Kaye, and S. Walker, of York; the last-named (14, of brood B) I have not seen, but Mr. Walker has kindly sent me sufficient details to enable me to include them in my classification.

Brood A (parent ♀ of August 25th, 1902, ? ab. *nigrescens*).—The total number of imagines bred was 167 (Prout, 114; Bacot, 53). Mine emerged between December 22nd and February 4th, Mr. Bacot's from the end of January to the beginning of March. They split up quite readily into two classes, the normal and the melanic, there being none which by any possibility could be described as intermediates; 74 (Prout, 48; Bacot, 26) belonged to the former or more typical class, 93 (Prout, 66; Bacot, 27) to the latter—ab. *curtisii*, *sens. lat.* The accession of an admixture (more or less) of black scales in the ground-colour, characteristic of the latter, is in every case participated in by the hindwings (though only weak in one of my reddest specimens), while not one of the "typical" series shows any darkening of the hindwings.

The matter of size is not one of much importance, as it is so largely dependent on the treatment; Mr. Bacot suggested that the melanic specimens were on an average the smallest, but the measurements which I have taken hardly bear this out, although it is noteworthy that the more *black* examples of the *curtisii* section do seem to be decidedly smaller than the more *red* ones of the same. Mr. Bacot's largest specimen measures 44mm., and is dark red, his second 43mm., and is the same colour, the rest are smaller, on an average decidedly so; the smallest reach 36·5mm., and are pale (two or three specimens), while several, both pale and dark, run to only 37mm.-38mm. My largest also reaches 44mm., and, like Mr. Bacot's, is dark red, several measure 43mm.; the smallest three (two dark red, one black) measure 37mm., while numerous, and of all colours, follow at about 38mm. On the average, my portion of the brood is just a trifle larger than Mr. Bacot's, probably because I kept my larvæ on the mantelpiece over a fire, and always with a superabundant supply of nutritious food. I may add, for comparison, that my southern specimens vary in size from 47mm. (two or three) to 39mm. (one), the average being about 43mm. or 44mm.; the smallest is a captured one, and the largest are bred, this species being one that tends to outgrow its normal size when reared in captivity. My northern examples (captured) range from not quite 44mm. (one) to 38mm., with an average measurement of about 41mm.

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* On the synonymy, see appendix to this article.

The so-called "typical" 74 correspond pretty closely to the general range of forms which we get in the South of England, and subdivide, roughly, into two groups, without that there can be said to be such a clear line of demarcation as there is between the "typical" and the "*curtisii*" series. About 43 are more or less pale or pale reddish-tinted, the "clay-coloured" series of Mr. Adkin's interesting paper (*Proc. South Lond. Ent. Soc.*, 1890-91, p. 150) or ab. *adsequa*, Tr.+*pallida*, Tutt; the remainder (about 31) incline to be darker and greyer, often without any reddish tint, and form the ab. *grisea*, Tutt, with its sub-aberration, *rufo-grisea*. The *adsequa-pallida* series are on the whole a trifle lighter than the average of those which we get in the South of England, and probably correspond with Mr. J. A. Clark's "group A" (*Entom.*, xxii., p. 145, pl. vi., figs. A1 and A2). They vary a good deal in the intensity of their markings, very few (not more than six or eight) having them weak enough to constitute true ab. *adsequa*, Tr. ("without any distinct markings")—a phase of variation by no means infrequent in our southern examples. On the other hand, quite a good percentage have the stigmata very conspicuous, even the orbicular being considerably darker than the ground colour, usually dark reddish. The last-named peculiarity is, according to Mr. Barrett (*Lep. Brit.*, iv., p. 16), somewhat characteristic of northern forms of the species. It is certainly, in my experience, rare in the south, for, in my long, picked series, I have only three specimens in which the orbicular is filled in with a darker shade than the ground colour, and even they are rather darkish specimens, so that the contrast is by no means so sharp as in these pale Forres examples. I may add here that several of the "*grisea*" series also have darkened stigmata, so that the total percentage of the "typicals" which are thus characterised reaches about 40 per cent., though, if we reckoned it for the "*pallida*" section alone, it would be nearer 50 per cent. In the "*curtisii*" forms there is never the slightest tendency to a darkening of the stigmata; they are usually exactly concolorous with the ground of the wings—though well-defined on account of their pale margins—occasionally, even, they are a trifle lighter than adjacent areas of the ground colour.

The 93 of the *curtisii* series show a good deal of colour variation, although the shades run from one into another. They commence with a fine rich dark red form, nearly uniform in colouring throughout the wing, with very little actual admixture of black, and corresponding with Mr. Clark's figure, C1 (*loc. cit.*). There are only some half-dozen of quite this form, but about 20 others have the red hue decidedly in the ascendant. Then follow 11 which are more mixed with black, especially towards the inner margin, and which may be compared with Mr. Clark's C2. The next development is to a nearly unicolorous dark brown or red-brown, shading off quite gradually into the extremes which I call ab. *nigrescens*, Tutt. I am disposed to classify 86 or 87 as belonging to this intermediate series, and the remaining 19 or 20 as true ab. *nigrescens*, but it is purely a question of degree. Most of these *rufo-nigrescens*, Tutt,[*] are rather weakly marked, and the brown hue is the product of a very perfect blending of the red and black over the entire wing-surface—a contrast to the irregular black blotching of the 11 mentioned before. It is worthy of note, as illustrating some possible influence of temperature conditions in modifying the variation, that no less than 33 of the *rufo-nigrescens* (*curtisii*, *sens. str.*) are in my portion of the brood, and only three or four in Mr. Bacot's; while, on the other hand, he has some thirteen or fourteen of the deeper *nigrescens*, and I only six. The pale outlining of the stigmata and the pale "elbowed" line are traceable in all the 93 *curtisii* (*sens. lat.*), and well-pronounced in all but a very few. Although, as already mentioned, the hindwings of all show some degree of infuscation, there is not a single example of the extreme ab. *nigra*, Tutt ("posterior and anterior wings almost uniformly black").

Brood B (parent ♀ of August 28th, 1902, ? ab. *rufo-nigrescens* = *curtisii*, *sens. str.*).—Comparatively few of this very interesting brood were successfully brought through; there are only 61 in all, 32 reared by Mr. Kaye, fourteen by Mr. Walker, and fifteen by myself. Mine emerged between January 13th and 30th, Mr. Kaye's between January 25th and February 23rd. Like brood A, they split up with perfect ease into the two main classes, 39 being of the "type" in the broadest sense (though very variable) and 22 of the melanic aberrations; the distinction of the infuscation or otherwise of the hindwings again holds absolutely. My fifteen measure the same size, on an average, as my portion of brood A; Mr. Kaye's, evidently through some difference of treatment, are considerably smaller, his largest (a grey specimen) measuring 40mm., his smallest two (both rufous, *not* melanic) barely 31mm., the average expanse being about 36mm. He tells me they were kept at an average temperature of 65° by day and 60° at night.

The typical, or non-melanic section shows greater diversity than that of brood A. Fourteen of them should probably be referred to the aberration *pallida* of Tutt (*Entom.*, xxii., pl. vi., figs. A1 and A2), and mostly have the stigmata well defined and in brighter reddish, though there are one or two exceptions. Two belong rather to ab. *grisea*, one of these being more tinged with pinkish (? sub-ab. *rufo-grisea*, Tutt), the other of a more decided grey. One specimen is of a dull reddish-brown, or somewhat of a chestnut shade, and with the dark stigmata, subterminal, &c., rather strongly expressed; it is a difficult specimen to classify, but, though rather dark, cannot be regarded as in any way forming a true transition to the *curtisii* series; nor is it quite sufficiently variegated to meet the description of ab. *prosequa*, Tr. The remainder (22 specimens) are all more or less of a light red tint, coming roughly under the head of ab. *rufescens*, Tutt (*Ent.*, xxii., pl. vi., fig. B1, and ? B2); only two of these have the markings as weak as in the first-named figure, the majority have them well expressed, and agree with fig. B2, excepting that their colour is not quite so bright; two or three, indeed, are only doubtfully referable to ab. *rufescens*, the colour being red-brown rather than red. Mr. Tutt's analysis (*Brit. Noct.*, ii., p. 96), which has helped me so much in the elucidation of the various forms, nevertheless leaves me in considerable doubt about his ab. *rufa*; he cites Clark's figures B2 and B3 to it, but they do not both represent the same form (*teste*, Mr. Clark's text, p. 145), and, to add to the confusion, he (Mr. Tutt) asserts that "the posterior wings of the Scotch specimens are often much darker than those found in England, although the form is obtained throughout Britain." I myself have never even seen a specimen so red as Clark's fig. B1 (*rufescens*, Tutt) from the south, to say nothing of fig. B3; yet even this latter has not (according to the figure) any true melanic tendency, either on fore- or hind-wings, and if the name *rufa* is to be applied to specimens which have the melanic tendency, I think it ought to be dissociated from the figures which its author has cited to it. If the differentiation between the "typical" and the "*curtisii*" classes is generally anything like so clear as in my material, I certainly could not consent to admit a varietal name which covered some specimens of each class. I am inclined to restrict ab. *rufa* to such examples as fig. B3, described by Mr. Clark as "rich, almost crimson" in colour, &c., and to add, "hindwings not infuscated"; it will then cover the most extreme development of the purely *red* coloration, not represented at all in the two broods which are the subject of this article, although I have one specimen from Aberdeen which can be referred to it.

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[*] From Curtis's figure (*Brit. Ent.*, pl. 348) I judge that this is the true ab. *curtisii*, Newm. Both Clark (*loc. cit.*) and Tutt (*Brit. Noct.*, ii. p. 98) have referred series C of the former gentleman's breeding (the claret-red forms) to *curtisii*, but the original figure is much nearer the colour of figs. D1 and D2 of Clark, with very little red, *excepting very narrowly* on the costa.

The melanic (*curtisii*) examples of our brood B range from about the type of Mr. Clark's C1 (two or three only) through examples which are more mottled with black (about ten, comparable with Clark's C2 or a trifle darker) to true ab. *nigrescens* (about five), two or three of them (bred by Mr. Kaye) verging on ab. *nigra* in the depth of the black of the forewings and the increasing infuscation of hindwings. The remaining four or five connect the redder with the blacker, not so much by blotching in certain parts with black as by an uniform commingling of the colours throughout—the form noted above as so prevalent (36 or 37 specimens) in brood A, and chiefly in my section of it.

In comparing the two broods, one notices two or three racial features worthy of mention. In brood A the orbicular stigma is *generally* round or roundish, and not very obliquely placed; in brood B it is *generally* narrower, decidedly obliquely placed, very rarely round, and fairly straight. Again, in brood A, there is an entire absence of the uniformly light red aberration (ab. *rufescens*, Tutt), whilst in brood B over one-third—about 36 per cent.—are referable to this form. Both broods show an absence of some of the well-known Scottish forms, such as the extreme ab. *nigra*, Tutt, the banded ab. *virgata*, Tutt, &c.

Summarised, the above analysis works out as follows:—

Brood A: ab. *pallida*, Tutt, &c.*, about 43; ab. *grisea*, Tutt, &c.,

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* I regret that I am quite unable to subdivide these into the *adsequa*, *pallida*, *ochrea*, *rufo-ochrea*, and *virescens* of Tutt, for although I consider that he has given an excellent scheme, yet, as Mr. Adkin says (loc. cit., p. 157): "This species

about 31; ab. *clarki*, mihi, *infrà*, about 37; ab. *curtisii*, Newm. (*rufo-nigrescens*, Tutt), about 37; ab. *nigrescens*, Tutt, about 19; total, 167.

Brood B: ab. *pallida*, 14; ab. *grisea*, 2; ab. *rufescens*, Tutt, 22; ab. *clarki*, 12 or 13; ab. *curtisii*, 4 or 5; ab. *nigrescens*, 5; unclassed, 1; total, 61.

APPENDIX.—SYNONYMY.—The oldest valid name which I know for this species is *melanozonias*, Gmel. (*Linn. Syst. Nat.*, ed. 13, i., p. 2544), dating from 1790[*]; the diagnosis is not first-rate, but I do not think my determination is open to any possible doubt, especially when taken in conjunction with the fact that Zschach, in the *Mus. Lesk.*, places it next to *pronuba*, and gives it as European. It is necessary briefly to remark on still older names which have at some time or other been considered applicable to this species. *Orbona*, Hfn., is now applied, and correctly so, to the species so long known as *subsequa*, Schiff.; Mr. Tutt, indeed (*cf. Brit. Noct.*, ii., p. 93), has considered this application to be incorrect, but evidently without having read Zeller's arguments (*Isis*, 1844, p. 32), or, perhaps, even Rottemburg's commentary on Hufnagel, both of which are final, and cannot be set aside.[†] *Subsequa*, Esp., which is restored by Snellen, in place of *comes*, Hb., without doubt mainly represents that species, but the *name* was erroneously adopted from Schiffermüller, whose *subsequa*—on the evidence of those who saw his collection, as well as on the inference from the prevalence of the species at Vienna—was certainly the one with the subapical black spots, the *orbona* of Hufnagel. *Pronuba minor*, Vill. (*Linn. Ent.*, ii., p. 279), dating from 1789, is rejected by Sherborn as not a genuine binomial, and although I do not doubt its application to *comes*, Hb., I accept Sherborn's judgment as to its invalidity. *Interposita*, Hb. (*Btr.*, i., 4, "Verbesserungen," p. 3, ? 1789) = *consequa*, Hb. (Samml., fig. 105, *post* 1800), is referred by Tutt and Adkin (*cf.* Tutt's *Brit. Noct.*, ii., 96-97) to *comes*, Hb., as a dark var.; but as those who have seen this (Austrian and Russian, &c.) form in a state of nature, all[**] refer it to *orbona*, Hfn. (*subsequa*, auctt.), I cannot take the responsibility of transferring it to *comes* until further evidence is to hand. But it is on account of the possibility that this name (*interposita*, Hb.) may have to take precedence of *melanozonias*, Gmel., that I have not yet restored the latter name to its rightful place, but have preferred to adhere to the generally-known one of *comes*, Hb. In the *London List* (*Trans. City Lond. Ent. Soc.*, ix., p. 72) I was unfortunately betrayed into accepting Snellen's unjustifiable application of the name *subsequa*. The true

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offers a very good example of the difficulties attending any attempt to supply varietal names to forms of a species known to be liable to great variation," and I find that these merge so from one into another as to appear inextricable; a few are no doubt *virescens*, but none are of so pure an ochre colour as many southern examples.

[*] "Ph. (Noct.) alis griseis ex luteo brunneis; posterioribus pallide flavis; disco macula transversa fasciaque submarginali nigra, *Mus. Lesk.*, p. 100, No. 297."

[†] Rottemburg's description distinctly implies the characteristic spots, for he says the forewings have the same markings as *pronuba*; moreover, *comes*, Hb., is very scarce about Berlin, and was long believed not to occur there, whereas *subsequa*, Schiff., is there "locally common" (*cf.* Bartel and Herz, *Gross-Schmett., Berl.*, p. 23). Vieweg, in 1790 (*Tab. Verz.*, ii., p. 95), first united *subsequa*, Schiff., with *orbona*, Hfn.

[**] Treitschke, Guenée, Möschler, Staudinger and others have evidently had a first-hand knowledge of it.

chronological summary, so far as we can at present go, works out as follows :—

1787. *Noctua orbona*, Fb., *Mant.*, ii., 150 [*nec* Hfn.].
1787-88. *Phalaena Noctua subsequa*, Esp., *Schmett.*, iii., 149, tab. 104 [*nec* Schiff.].
? 1789. ? *Phalaena Noctua interposita*, Hb., *Btr.*, i., pars 4, "Verbess." [potius ad *orbonam*, Hfn.].
1789. *Phalaena Noctua pronuba minor*, Vill., *Ent.*, ii., 279 [non binom.].
1790. *Phalaena Noctua melanozonias*, Gmel., *Linn. Syst. Nat.*, i., 2544.
cir. 1800. ? *Noctua consequa*, Hb., *Samml.*, iii., fig. 105 [n. nom., =*interposita*].
ante 1816. *Noctua comes*, Hb., *Samml.*, iii., fig. 521.
1816-25. *Triphaena comes*, Ochs., *Schmett. Eur.*, iv., 69; Tr., *ibid.*, v., pars 1, 254.

For the varietal classification, Mr. Tutt's scheme (*Brit. Noct.*, ii., p. 96), already so frequently alluded to, of course stands as the basis. I would only suggest the following modifications :—

3.—Ab. *consequa*, Hb., should be called *interposita*, Hb.—Hübner's prior name for the self-same specimen; but its position here should be queried, as I have already shown. I would suggest, too, that the figure is *purple*-grey or *violet*-grey ; certainly not black-grey.

5*a*.—Ab. *rufa*, Tutt. Restrict by adding "hindwings not infuscated."

5*b*.—Should be numbered "6," as it has certainly nothing to do with the "red" series. The name should be ab. *comes*, Hb., and it would be well to add "variegated with darker," and to sink *prosequa*, Tr., as a darker and still more variegated sub-aberration (*vide* Hb., fig. 521).

Instead of "6.— . . . . var. *curtisii*, Newm.," read: 7.—Ab. *clarki*, n. ab. Deep red, more or less sprinkled with black, both on fore- and hindwings=*curtisii*, Clark, Tutt, *nec* Newm. Types, Mr. Clark's specimens figured *Entom.*, xxii., pl. vi., figs. C1, C2.

8.—Dark dull brown, hardly tinged with reddish excepting narrowly on the costa=ab. *curtisii*, Newm. (see fig. typ., Curt. 348)=*rufo-nigrescens*, Tutt.

Ab. *nigrescens*, Tutt (*loc. cit.*, pp. 96, 98), and ab. *nigra*, Tutt (*loc. cit.*, p. 98), will now stand as 9 and 9*a*.

The "type" form of the species, if this be *melanozonias*, Gmel., is probably intermediate between *pallida*, Tutt, and *ochrea*, Tutt, but, as I have said, I am unable to sharply differentiate these pale and roughly typical forms.

Lepidoptera of the Italian Riviera—Alassio, Albenga, Laigueglia.

By J. W. TUTT, F.E.S.

At Alassio, April 12th broke dull and cloudy, and a walk at the back of the town exhibited, besides the common Pierids, only *Anthocaris belia*, *Leucophasia sinapis*, *Euchloë cardamines*, *Pararge egeria*, *P. megaera*, *Brenthis dia*, *Coenonympha pamphilus* and *Cyaniris argiolus*, in the fitful gleams of sunshine with which we were favoured. Nor did the weather improve, and henceforth storm, dulness, and intermittent sunshine were the order of the day. It may be worth noting that this break in the weather was contemporaneous with the break of the spell of fine weather that had until then favoured the British Islands, and bad weather appears to have been at this time pretty general over the whole of Western Europe.

April 13th was also dull, although the temperature was fairly high, and we arranged to visit Albenga, a most interesting town a few miles on from Alassio. Had the weather been fine, one suspects one would have made a good bag on the outskirts of the town; as it was, and in spite of the dulness, broken only rarely with real sunshine, one saw quite a large number of common insects. *Pieris brassicae* was in immense numbers, *P. rapae* was much less frequent, *Papilio podalirius* was several times seen, and so also was *P. machaon*. On the flats outside the town, we saw the snail-shell-shaped cases of *Apterona crenulella* in countless numbers on some of the tree-trunks, where they were spun up for pupation, as well as *Coenomympha pamphilus* in abundance, several specimens with a tendency to an increase in the number of spots, and, on the same ground, *Colias edusa* was exceptionally common, but the greater number of the males exceedingly worn. It was very noticeable how much smaller were the ♂ s than the ♀ s, and the latter were in much better condition. *Anaitis plagiata*, *Aspilates citraria*, and *Acidalia rubricata* were well out, whilst a few *Pararge megaera*, *Polyommatus icarus*, *P. astrarche*, *Syrichthus malvae*, *Anthocaris belia*, and *Brenthis dia* were observed, but the want of sun prevented anything from flying. Among the bushes and trees by the side of the river, *Pararge egeria* was common, *Leucophasia sinapis* seen twice only, and *Euvanessa antiopa* flying round the willows, evidently ovipositing, whilst during a short glint of sunshine, at some bushes by the roadside, *Callophrys rubi* and *Cyaniris argiolus* appeared to be quite abundant. Entomologically, want of sun spoilt the day entirely.

The 14th broke almost cloudless, but with a powerful wind that prevented insects from flying, except in the shadiest corners, and not even a *Pieris brassicae* was observed as we walked along the coast this lovely morning to Laigueglia. At the Capo Mele we followed the pathway amongst the bushes to the right, and observed a few *Callophrys rubi* trying to make the best of matters. Near the summit a broken wall led into a neglected garden, and getting thereinto we found not only a sheltered nook or two, but a growth of orchids that was simply delightful. We followed a path into the sheltered valley, picking up a fine series of *Polyommatus baton* at the thyme blossom as we went along, of which only three were ♀ s, and a few *Nomiades melanops* and *N. cyllarus*, both species unaccountably badly worn. Here, too, we disturbed several *Phytometra viridaria* (*aenea*) and one or two *Acidalia marginepunctata* of a very pale form; whilst several *Colias edusa* defied pursuit, owing to the awkward nature of the terraced ground, and only one or two were successfully netted, but here we obtained our first *Colias hyale*, a fine male, just emerged, but, as is usual with these early spring examples, very small. One or two rather large *Anthocaris belia* were netted, as well as one or two *Leucophasia sinapis*, whilst several *Pararge egeria* var. *intermedia* and *Pararge megaera* fell to the net. Having overlooked the beautiful Andora valley, we ascended to a village directly above us, and then followed the ridge of the amphitheatre of hills that surround and shelter the Alassio district. A lovely breeze, brilliant sun, and charming scenery, with a wide out-look over the Mediterranean, made this jaunt delightful. Only a few *Polyommatus baton* were, however, picked up at rest on the grass stalks. The walk down one of the stepped lanes into Alassio was simply terrible. The

15th was wet, and one could only take walks along the sea-front; there was no entomology possible. The 16th was nearly as bad, but after déjeuner the sun broke out, and we took a little walk to the Cross. A few specimens of *Gonepteryx cleopatra* crossed our path, and *Pararge megaera* was frequent, whilst one or two very fine *Pieris daplidice* were netted, but most attention was paid to getting a fine series of ♀ *P. baton*, which were not at all uncommon about the thyme blossom, and flying with which were occasional specimens of *Nomiades cyllarus*. No other butterflies except a fine ♀ *Cyaniris argiolus* were netted, although several Micros were taken, the latter including *Micropteryx aureatella* and *M. ammannella*. The next day was cold and wet, with snow on all the mountains above 1500ft., so we agreed to go on; I moved on to Genoa and Milan, the Doctor and Mr. Bourgeois going straight on to Locarno where I was to again meet them.

Lepidoptera of Locarno.

By J. W. TUTT, F.E.S.

I reached Locarno on April 19th, and although a brilliant sun was shining in the afternoon, the wind was too powerful for the insects, and I was not surprised to hear that Dr. Chapman and Mr. Bourgeois had had largely an unsuccessful day. The 20th, however, was sunny and warm, and we walked out to Contra, and then up the Val Verzasca towards Mergoscia. What Locarno can produce at this time of the year Dr. Chapman has already, in earlier volumes of this magazine, told us, but it was really delightful to walk up the lane-like zigzags that run up among the vineyards and gardens, with here and there a rushing stream edged with bushes for a few yards, and get amongst the insects once more. For a brief two hours—10 a.m. until noon—the net was exceedingly busy, and I was astounded at the results. The commonest species was, perhaps, *Chrysophanus dorilis*, a fine form with a fairly large male, the disc of the forewings tinged with yellowish, the marginal series of orange-red spots on both fore- and hindwings not very strongly developed, the underside strongly ochreous, the forewings tinged with copper and well spotted. The ♀ approaches the magnificent Digne specimens, being large and of a rich coppery-red colour, with strong black markings, the hindwing marginal series of red arches being particularly bright. I really think this race ought to be called var. *locarnensis*, and I suspect it to be pretty general in all the warm corners among the Italian lakes. Only two examples out of 18 captured, however, are ♀s. Next to this in abundance was *Brenthis selene*, but I do not seem to have a single ♀ among the dozen captured, although many ♂s were liberated on inspection as being below standard. Seven beautiful *Melitaea phoebe* of good size and rather dark in colour fell chiefly to the doctor's net, and astonished me at being on the wing so early in the year; but the species must have been out some days, for one ♂ was in very poor condition. One of the two ♀s taken had largely lost the second outside transverse line of the forewings, and was somewhat weakly marked. More astonishing still was the capture of a single fine newly-emerged fiery-red *M. didyma*. *Brenthis dia* was apparently going over, and two examples of *Issoria lathonia*, of the usual small spring type, were not at all unexpected. *Pararge megaera* was common everywhere, but only two (or three at most) *Pararge egeria* var. *intermedia* were seen, the one captured being a very fine ♂. Two *Colias hyale* were netted, but not a single *C. edusa* was good enough to keep; and, although several ♂ *Euchlöe cardamines*, large and well-coloured were taken, no ♀ was seen. Many *Leucophasia sinapis* were captured, and I was rather surprised to find the ♀ s uniformly of much smaller size than the ♂ s. *Coenonympha pamphilus* was common on all the grassy plots, and, in one shady nook under the trees, *Nemeobius lucina* flitted strongly from bush to bush; but all those captured were passé, except a giant ♀ taken by the doctor. *Polyommatus icarus* was well out, as also was *Chrysophanus phlaeas*, all the specimens with a very strong marginal series of red spots on the underside of the hindwings and the upperside with blue spots (=ab. *caeruleopuncta*); a single, quite-recently emerged, specimen of *Pamphila sylvanus* was captured, and also a single *Syrichthus malvae*: *Polyommatus astrarche* was worn; of *Cyaniris argiolus* the ♂ s were over, but the ♀ s were still in good condition. The only moths taken were *Strenia clathrata* and *Minoa euphorbiata*, one specimen of the well-known dark-grey form, the others of a pale silky greyish-ochreous tint, very different from the reddish ones taken a few days before at Agay. After lunch at Contra we walked on up the Val Verzasca, but there was no sun on our side of the valley, and we had left the butterflies behind us. On the rocky walls, cases of *Bankesia alpestrella* were abundant, and a beautiful silvery specimen (unfortunately broken in the setting-case) of *Boarmia cinctaria* was taken. Cases of *Taleporia tubulosa*, *Luffia lapidella*, and *Narycia monilifera* made up the rest of our take. I may add that *Diurnaea fagella* was found on the rocks. It seemed a strange species to take with *Colias hyale*, *Pamphila sylvanus*, etc., from the British standpoint. *Pieris brassicae* and *P. rapae* were very abundant, *P. napi* less so. Several species of the Vanessids were observed—*Vanessa io*, *Pyrameis atalanta*, and *P. cardui*. Pupæ of *Aporia crataegi* were spun up on the walls, and larvæ of *Aglais urticae* were almost full-fed. Cases of *Pachythelia villosella* and *Acanthopsyche opacella* were fairly abundant on all the stone walls and other suitable places by the roadside.

April 21st was dull, and we walked over the hills to Ronco, dropping down to the pier at Brissago, and returning to Locarno by boat. A couple of larvæ of *Pachygastria trifolii* were found almost before we had left the town, one sunning itself on a stone. Except for two breaks of about five minutes each the sun positively refused to shine throughout the day, and during that time we saw only *Callophrys rubi*, abundant, *Pararge egeria* var. *intermedia*, ♂ and ♀, *P. megaera*, *Euchlöe cardamines*, ♂, *Polyommatus icarus*, ♀, and the two common Pierids, *Euclidia glyphica* and *Acidalia marginepunctata*, a form very near our Dartmoor one, and *Eupithecia pumilata* were the only other Macrolepidoptera observed. In the evening it rained, and it rained all night, and all next day, and all the next night, without ceasing, so we went on to Lucerne in the morning, leaving the Doctor and Mr. Bourgeois to outstay the rain. Locarno appears to be a place of marvellous possibilities entomologically. It did not give me, at any rate, a fair chance to sample its lepidopterous fauna.

The rearing of Ennomos autumnaria.

By J. C. DOLLMAN, F.E.S.

The ova, received from Mr. W. H. B. Fletcher, and obtained from a Chichester strain, hatched on May 24th, and the young larvæ commenced feeding almost at once upon the food provided—apple. The larva upon emergence was about $\frac{3}{16}$ of an inch in length, and very heavily weighted forward in the head and prothoracic segments. It was an extremely active and restless creature, and erected itself upon its anal and abdominal claspers to assume a quick, jerky lateral action, in which it was almost continually occupied. In fact, the only method of keeping the creature in the field of vision, under the lens, was by examining a specimen previously stupefied with spirit. The head was large and yellow in colour. It was formed by two lobe-shaped lunules, each bearing five black lateral spots on the side; four in a semicircle, radiating upwards, and a smaller one below, forming the axis. The jaws were sprinkled with minute black dots, and the entire head was furnished with short, stout, white setæ. The prothoracic segment was of a lighter yellow than the head, and projected hood-like, over it, with a sharply defined skinfold edge on the crown. On the posterior edge of this segment commenced, in a suffused manner, the coloration of the dorsal surface, which was continued to the edge of the anal segment, and was of a dark olive-green. It was deepest in tint on the thoracic and first four abdominal segments. It was softened away into the anal segment, which, like the head, was of a clear yellow. The dorsal marking was abruptly defined on the lateral edges, where it was broken in its line by the transverse wrinkles found between the segments. On each segment were four whitish tubercles in this dorsal area, arranged two on each side, forming the corners of a square. These tubercles were larger on the segments towards the anal end, and were all dotted in the centre with a dark bristle. The spiracular line was broad, notched, and irregular. It was yellow in colour, and extended from the head to the anal segment. The spiracles were white, with thickly marked dark rings around them. Below this was the abdominal surface, which was of the same dark olive tint as the dorsal. The legs and claspers were yellow, and finely finished with black terminals. The entire larva was bristling with short setæ, both black and white.

On May 29th, the larva had attained a length of $\frac{1}{4}$in., and the head, no longer yellow, was pale brown, finely reticulated with white; the mandibles were also whitish. The lunules were sharply defined on the outside with a keen black line, and were also divided on the crown in the same way. The head had not increased in size, but the diameter of the body had grown to match it in scale, so that the appearance of the larva now was that of a graceful elongated creature. The lateral spots on the head were still present in the same formation. The dark dorsal region had given way to a cool olive-grey tint; and the spiracular line and anal segment were no longer yellow but a lighter tint of this olive-grey The skin was smooth and shining, neatly incised by transverse folds at the junction of the segments. The tubercles on the dorsal area, four to each segment, were now more suffused in their definition, and had strong dark centres. The spiracular line was not so abruptly defined as before, but, along this, *immediately* upon the spiracles, was a thin thread-like line, rather lighter than the ground colour. The spiracles were still light in colour, with black rims, and on either side of each was a black tubercle, and also one below it, all furnished with a black bristle. The anal flap was dotted with dark tubercles, and possessed six stiff black setæ, three on each side, all directed backwards. The ventral surface was dull in colour, and blotched with olive-grey. The legs were ringed with dark lines, and dotted with minute warts, as also were the claspers. In colour, these were almost of the same tint as the head.

On June 4th, the larva was about $\frac{7}{16}$in. in length. Seen with the unassisted eye it was shining in appearance, with a pale yellow-brown head, and tinged with the same tint posteriorly. The dorsal surface was of a pale olive-green in colour, and the spiracular portion of a pale yellowish-grey. The abdominal region was of the same tint as the dorsal, and all of the legs and claspers, were marked with heavy skin-folding at their junction with the body. Under the lens the head was still of a pale yellow-brown, with a finely reticulated surface, bearing white setæ, and on each cheek the semicircular arrangement of black warts still remained with a lower one as their axis. The prothoracic segment was sharply folded across the crown of the head, and the colour of the head suffused into it; as also was the same colour in the anal segment suffused into the twelfth. The dorsal surface was blackish-green, subdivided by four blotched, irregular, whitish lines. These started sharply on the prothoracic segment, from its anterior edge above the head and travelled in a broken manner for the whole length of the larva. The four black warts on the dorsal face of each segment were still in evidence, but were now wanting in their light circumscription. The dorsal colour finished rather sharply on the summit of the anal segment in a point, amongst heavy skin-foldings. There was an irregular, light, lateral line on the edge of the spiracular portion, and a similar one on the line of the spiracles precisely. All of these lines were extremely difficult to locate, owing to their irregular and broken course, and the very glossy surface of the larva's skin. The spiracles were still light in tint, surrounded with black rings, and were set amongst the heavily corrugated skin-folds of the spiracular line, which was freely dotted with minute black warts. The legs and claspers were of the light colour of the head, and blotched and sprinkled with black warts. The entire larva was well provided with short, black hairs, which sprang from the warts; while the anal segment still possessed the six stiff, dark, setæ, pointing backwards. On June 9th, the larva was $\frac{5}{8}$in. long, and had undergone a radical change in construction, being much altered in colour. Its appearance, seen with the naked eye, was sage-green, with a dark brown head, anal segment, and spiracular region. Under the lens it presented a most beautiful study. The head was of a light chestnut colour, blotched with black, in a manner which forcibly recalled the markings upon the skin of the jaguar. The cheeks were free from these markings, but still carried the four dark warts in a radius upon a fifth, lower down. These black warts were now set in a white ring, which was sharply defined against a dark chestnut edge around them; which was, in its turn, suffused into the general coloration of the head. The mouth was cold blue-gray, with a projection on either side, set forward, and each tipped with a bristle. The head was porrected in carriage, and possessed several white setæ, also set forwards. The dorsal surface, sage-green in colour, when examined with the lens showed that this sage-green effect had been produced only through the visual fusion by the eye of the delicate detail of yellow, white, and black which was then visible. This dorsal colour detail was very striking in character, and distinctly reptilic in colour and design. It instantly reminded one of the skin-markings of some of the snakes. The principal features were two scalloped subdorsal lines, the points resting on the fold at each segment, of a pale yellow-white colour, but very broken and fused in appearance. There was also a distinct suggestion of a mediodorsal line of an umber tint. These lines all ran from the edge of the prothoracic segment, by the head, to the anal segment; but they were lost and broken by the multiplicity of the lozenge-shaped and scale-like markings, which spread in all directions, and which were black in tint, with a yellowish-white ground. The skinfolds between the segments were projecting, and distinctly in evidence, being darker in colour than the ground tint, and possessing, on each side of every segmental division, a sharply expressed, upright, yellowish-white spot; each with a white bristle, and forming the points of the scalloped subdorsal line before referred to. These spots were brilliantly white on the prothoracic segment, immediately behind the head, and between each pair of spots, on the dorsal surface, was a vaguely expressed light V-shaped form, set forwards, with the base interrupted by the dark dorsal line. On the second abdominal segment there was a transverse dorsal ridge, sharply crossing the crown of the segment. This was black, with its sides boldly picked out with white. On the fifth and eighth abdominal segments there were also slightly projecting transverse dorsal ridges. These ridges were furnished with two additional white spots, one on either side of the mediodorsal line, thus forming a transverse series of four on each ridge. The dorsal design finished sharply in two deeply incised skinfolds in front of the anal segment, which were heavily sprinkled with dark warts bearing dark bristles. The anal segment was a bold construction of the colour of the head, but without the jaguar-like markings, displaying instead a number of warts bearing dark setæ. The anal claspers were strongly developed, and very spreading in lateral action, and they, with the abdominal claspers, were of the colour of the head, with darker terminations, and dotted with black. The fringe of hooks on the inner side of the pedal rings was important in scale, and chestnut in colour. The legs were dark olive in tint, blotched strongly with black, and bearing light hairs. The spiracular region again bore resemblance strongly to a reptilic type. It was yellowish-grey in colour, heavily corrugated, and scaly in appearance, the divisions and creases between the corrugations being rich and dark in colour. Each spiracle was set on a plate-like division of skin, and was a very beautiful object. Seen under a high power, it had a glistening metallic sheen, and shone like a jewel. The core of the spiracle was golden, and this was surrounded with a sharp white ring, into which the gold colour was suffused. This combination was set in an intensely black ring again, the outer edge of which was softened away into a further radius of a beautiful lustrous copper colour. The ventral surface was decorated with two irregular blackish lines, running from the legs to the abdominal claspers. This black colour ascended upwards, laterally, on the 3rd abdominal segment, and crossed the spiracular line, finishing at a warty projection. The under-surface was black between the legs, and light blue-grey between the abdominal and anal claspers. The anal flap was pointed in shape, with a shorter projection on each side, from each of which proceeded two bristles. The anal segment below extended in two fleshy and pointed terminals, each bearing a bristle.

On June 15th, the larva had grown to be rather over ¾in. long; was slender in form, and, to the naked eye, drab in colour. The warty ridges on the abdominal segments—two, five, and eight—were now a prominent feature, especially the first-named, which projected boldly from the dorsal surface transversely across the larva. With the aid of the microscope the drab colour of the creature was found to be produced by an infinite blending of blotches and markings of black, white, and brown, on a greenish-yellow ground. The head still possessed the jaguar-like markings of dark blotches, but the resemblance was not now so striking, as the ground colour was stone-grey instead of chestnut. The series of lateral warts was still present on each cheek, but were now principally white in effect, the black centres having dwindled to a mere dot. They were still surrounded by a fawn-coloured ring. The lateral projections, forward from the jaws, were as evident as before, of a light warm drab colour, and each one tipped with an elongation of bristle. The dorsal surface still retained the two subdorsal scalloped stripes, though these were suggested only in a faint degree, as the irregularity of the markings had broken up their continuity in addition to the suffused character which the stripes had assumed. Reference was made in the last examination of the larva to the reptilic character of the design on the skin-surface, and comparison made between its appearance and that of the serpent tribe. Now the skin seemed to be broken up and lozenged into puzzle-shaped plates and wrinkles, which, as they were accentuated by deep foldings and corrugated divisions, suggested rather the hide of the crocodile in detail. This particularly was the condition of the spiracular region.

The ridgy transverse humps, on segments two, five, and eight, were dark brown, reticulated with white, and possessed still the white lateral spots, though these were now more suffused in character, and were surmounted by a dark bristled wart. The transverse skinfolds between the segments were heavily scored and fawn in colour. They still retained, each one, the white lateral spots, though these were now almost suffused to obliteration. The dorsal markings terminated in the strongly accentuated fleshy folds above the anal segment, and these were thickly studded with bristly dark warts. The anal segment was also fawn in colour and showed several tubercles with light setæ. The anal flap was scalloped at the edge, showing four blunt points, each carrying a dark tubercle set with a stout bristle, light in colour. The two pointed projections from the extreme rear of the anal segment, between the claspers, were very pronounced in form, and they, also, carried each a dark tubercle with a light bristle. The claspers and legs were fawn in colour, blotched and marked with darker. The legs were received into the body by heavy foldings of the cuticle, which was a dark brown between the creases. The spiracles were similar in colour to the last record of their appearance, excepting that they were not *now quite so beautiful*. The centre was golden with a dark vertical tick at the base. This centre was surrounded with a thin white ring, which, in its turn, was set in a dark ring bounded by a copper-coloured border merged into the adjoining ground colour. The ventral surface was of the tint of the dorsal. It was irregularly blotched, with a series of dark warts arranged in two lines, lengthways, having two warts on each segment. On segment three there was a dark ring, which, on a fleshy projection, ascended laterally across the spiracular line to a dark bristled wart on the subdorsal.

By the 23rd of the month the larva measured 1⅛in. long, and appeared to the eye of a brownish-grey colour. It now assumed for the first time that close imitation of the twig on a plant stem, which many of the "Thorns" adopt. The hold with its spreading and strong claspers was firm, and the body carried in a straight line at about the angle of 45° to its resting-place. There was spun from the head, to some adjacent and convenient point, an extremely light thread, and the habit of the larva was dull and lethargic. The head and the ridged projections on the body imitated the embryo buds in aspect, and the third pair of legs, carried in a projecting manner from the thorax, tightly pressed together, formed another broad sheath of a further development in appearance. The first two pairs of legs were closely packed against the ventral surface of their segments. Examined with the lens, the head was in ground colour of a dark steely-grey, marked with horse-shoe-shaped and ocellated blotches of a dark brown in a very beautiful manner. A V-shaped bar traversed the face, apex upwards to the lobal division, with each extremity resting upon the base of the pointed lateral protuberances from the jaws. These were now light-coloured on their bases, with flesh-coloured extensions terminating in the stiff and pointed bristles. Under this light V-shaped line was a dark strong border, and in the triangle between the lobes the face was greenish-grey. The jaws were grey, with a thick setting of hairy projections. The lateral semicircles of white spots, dark centred, and set in fawn-coloured rings, were still present on the cheeks. The dorsal area was smooth in texture and grey in colour, densely covered with the reptilic-like reticulation of brown, yellow, black, and white. Its distinctive features were a light-coloured, fine subdorsal line each side, starting from the lobes of the head and running to the anal segment. This line was very broken and wavering in its course, but accentuated on the anterior edge of each of the prothoracic segments by a white spot on a rich brown warty protuberance. On the crown of the metathoracic segment were two minute black warts, followed, on the 1st and 2nd abdominal segments, by heavy skinfolding to an elongated dark black blotch, on each side of which the subdorsal line was at its widest, and inclining inwards in line. This was again followed by four pairs of rich brown warts, with white centres. On the 2nd abdominal segment the transverse ridgy hump was very decided, and of a rich dark brown colour, with a light lateral blotch on each side. On the 3rd abdominal segment there was a dark tubercle projecting laterally on the spiracular line; while on the 5th and 8th were found the other two transverse projections on the dorsal area; the first-named slightly bifid on the crown, and the second terminating in two blunt points. These were of a rich deep brown colour also, with white lateral blotches. On the dividing segmental skinfolds, and also midway between each, there was a white spot on the subdorsal line, those on the skinfold being the most defined. Between each pair of these white spots was found a pair of dark dorsal spots. The dorsal decoration terminated, as heretofore, in the corrugations of the skin at the anterior edge of the anal segment. The anal flap was fleshy, mottled in colour, with the scalloped edge still in existence; the four points of which were bearing each the stout bristle. The lower formation of the anal segment was full and fleshy, with its fleshy-pointed projections directed backwards and terminating with a bristle also. This segment was fawn in colour. The ventral area was mottled grey in colour, with a pair of dark spots on each segment backward from the 3rd abdominal to the 6th. On the 1st and 2nd abdominal segments there existed a chestnut median line, and on the 3rd a dark transverse band, formed by the suffusion of the pair of dark spots, carried upwards to the lateral tubercles on the spiracular lines. Between the abdominal and anal claspers the ventral area was greenish-grey in colour with a suffused central black core. The claspers were dark brown in colour with a light chestnut exterior face. The legs were fawn in colour received into the body by heavy dark-coloured skinfolds, and, with the claspers, were strongly ringed and spotted with dark ridges and warts. The spiracular line was still a knotty corrugated line of great irregularity, and was light fawn in colour. The spiracles were as last mentioned—gold centred, with a dark vertical tick from the base, enclosed in a brilliant fine white ring which abutted on a dark sharp ring set in a copper-tinted border, which was suffused into the ground colour. The entire larva was fairly well provided for its entire length, with dark setæ.

On the 29th the larva measured 1½in. and was very like a twig in form when at rest. The powerful lobe-shaped anal claspers firmly clutched the support and were assisted in the same manner by those on the 6th abdominal segment. The head was carried forward in a line with the body, and always had to sustain it, the thin web line from some point above. The legs on the prothoracic and mesathoracic segments were tightly held to the ventral face of the thorax, so as to remain unobservable, while those on the metathoracic segment were larger and extended rigidly at right angles with their base. The final terminations of these were bent sharply at right angles at the second joint, and folded inwards across each other as a man folds his arms. The projections on the dorsal surface on abdominal segments 2, 5, and 8 and the lateral warts on number 3 assisted the imitation of a twig effectively. The colour of the head was greyish-brown, with heavy dark blotchings of the ocellated and horseshoe markings, the lobes having light crowns to them. The light inverted V-shaped mark below them was warmer in colour than before, and now possessed two distinct upward points more like a reversed W in character; it also retained the dark bar below it still. The extremities of this marking rested on the bases of the lateral projections from the jaws. These were now strongly developed, and consisted of a flesh-coloured base on which the projection was placed, united to it by a black band. The projection itself was vinous in colour, and showed two excrescences at the top—one larger than the other, in addition to the bristly termination. Both of these excrescences were fleshy, and furnished with a slight hair at the extremity. The bristle beyond them was flesh-coloured, and very pointed at the end. Between these the face was a light warm grey, while below this were found the dark jaws with their fringe of brown setæ. The lateral semicircle of ocellated spots on the cheeks was strongly defined, and the spots themselves were very eye-like, possessing a brilliant white centre, with a cloudy prismatic spot in the middle surrounded with a jet-black ring. The ground colour of the body was a warm fawn, and the dorsal surface marked with a symmetrical design of a complex character, which could only be adequately represented by a drawing showing it magnified to scale. The thoracic segments had each a light diamond-shaped blotch, dorsally, with their anterior and posterior facets bordered near the edge by suffused dark V-shaped lines. Through these ran a very inconspicuous thin grey dorsal line, which was continued in a delicate manner the whole length of the larva, but visible alone where the ground colour was light enough in tone to afford it relief. On each of these thoracic segments was a pair of small dark brown dorsal warts, one on each side of the dorsal line. The warts on the prothoracic segment were nearly as distinct as those on the other two. Immediately on the anterior edge of the prothoracic segment was the commencement, by a bright light dot, of a thin light subdorsal line, which continued in a broken manner to the anal segment. Just below this line, on the segmental skinfold, was a dark wart between each of these thoracic segments. These were set in a short, cloudy dark line. Close behind the dark dorsal warts on the metathoracic segment commenced a rich brown-coloured marking in the shape of an elongated lyre, and which extended for the the whole length of the 1st abdominal segment on its dorsal surface. Continued from this, the dark lines edging the form opened out to form a figure 8 design, which rested against the dark projecting dorsal ridge on the 2nd abdominal segment. Laterally, this dark ridge bulged in a fleshy manner around its spiracle, just forward from the light vertical mark which was found on the side of the ridge. This figure 8 contained in its posterior loop the two dark dorsal warts which belonged to the segment, and which had a dark line running from them backwards and outwards to the base of the figure 8. The next segment, and those backwards to the 7th abdominal, carried an hour-glass shaped marking, which contained in each case the two dark subdorsal warts in the lower lobe of the design, and which had a dark line from them, forming a border, slightly removed from the edge of the marking. This 3rd abdominal segment possessed a sharply-pointed lateral protuberance on each side of a dark brown colour, which was set in a dark cloudy marking that contained the spiracle. On the 5th abdominal segment the dark dorsal projection was bifid on the crown, and very boldly marked against the ground colour of the back, which hereabouts was of a greenish tinge. The next two segments each possessed two pairs of the subdorsal warts, and the dark protuberance on the dorsal surface of 8 was now consisting of two distinct pointed humps. Behind these were two deep transverse skinfolds, each carrying a pair of the dorsal warts, followed by another pair on the scalloped anal flaps. This, and the pointed posterior projections below it, still bore the stiff bristly appendages, set backwards. Below these dorsal decorations ran the light, broken, subdorsal line, which was most evident on the 1st abdominal segment at the lyre-shaped marking, and was constructed otherwise mainly by disjointed tracery, and white dots on each skinfold and each segment. Again, below this, was found a badly-defined light spiracular line as far as the abdominal claspers, after which it was suggested only by the light setting around the spiracles on the remaining segments. The spiracles now had lost their beauty, and consisted of a sunken oval gold-coloured plate, with a thin black vertical line across their centres, set in a raised, and brightly shining, dark rim. The ventral surface was of an olive-grey ground colour, and had two interrupted dark lines from the head to the abdominal claspers. These lines were gradually broken through in a suffused manner, at the centre of each segment, and they were most declared and positive on the skinfolds between the segments, where they themselves contained a white dot. Where the broken suffusion of the lines occurred, there was an isolated dark dot, suggesting the continuation of the line, and another similar dark dot before it commenced again. Between these dark lines, on abdominal segments 1 and 2, was a reddish tint, which also was suggested in the other segments in a slighter manner. On the ventral surface between the two pairs of claspers, the ground colour was a yellowish-grey, and it had a central line dividing it of an olive-green colour, which widened out into a broad triangle between the anal claspers. Each of the dark warts referred to, dorsal, lateral, and ventral, carried a short black hair. The first two pairs of legs were various in colour and the third pair was dark brown, and much larger than the others. They were all strongly marked and dotted with black, especially the third pair, and were received into the body amongst heavy wrinkles and foldings of the skin, which bore many minute dark warts.

By July 5th the larva was 2¼in. long, and had the appearance, in colour and markings, of full development. It was now of a rich umber-brown tint, with sienna-coloured, and lighter, blotchings from end to end. It had all its characteristic points emphasised since the last examination of it, and its resemblance to a subordinate woody part of the foodplant was remarkably faithful. The head, the projecting pair of legs on the metathoracic segment, the ridges on the dorsal, and projections on the lateral, surfaces, with the powerful knotty claspers, were all in excellent imitation. Along each side ran a lateral line, which was fleshy in texture and much corrugated and scalloped in its course; suggesting the irregularities of young thin bark. The head was now wider than the prothoracic segment on the front edge of the lobe crowns, which had lost their oval form and finished rather squarely and abruptly on the face. The lobes were reddish-grey marked closely in broad and broken outline with ocellated forms, and no longer in blotches. These outlines were strongly drawn and consisted of innumerable raised and flattened dark warts. The series of eye-like forms in a semicircle on the cheeks was now very conspicuous, and resembled so many eyes, even more than hitherto. They were pearly white, set in black rings, with what may be called black pupils, and the most posterior one had a decided inward and downward squint. The W-shaped marking on the face was now bolder and more spreading, rising squarely upward, and forming a light fawn border to the inside edges of the apex between the lobes.

It was accompanied by the darker line below it, now wider and more suffused. The pointed projections from either cheek were vinous in colour all over, and were diverted in line rather outwardly from their bases. The markings on the body of the larva could not be said to have altered constructionally in design from their last examination, but they were all larger in execution, and impressed upon the ground colour in a more suffused manner. The ground colour was warmer on the portions between the segments on the skinfolds, and the legs and claspers were all vinous or claret tinted. The dark blotchy markings on and round the excrescences were heavily and broadly pronounced, as also were the dark markings on and round the legs and claspers. The anal flap maintained the same form, though it was more thick and fleshy than hitherto, and there also remained the two pointed projections, extending backwards from the extremity of the segment beneath. The setæ on these portions were strongly evident. The spiracles were embedded in raised oval swellings, and were gold-coloured with a lighter edging. They still contained the dark vertical slit in the centre, and around them was a glistening and raised copper-coloured skin ridge. Though the larva had attained its final aspect in markings and colour, it had yet a few days of feeding to attain its full size. It was very quiet and sluggish in habit, and sat continually at rest, clinging with the claspers and holding the body at an angle of 45° to the base. It invariably had the supporting thread spun from some point to the head, and this thread was now of a very tough consistency, necessary to the increased weight of the larva, which was considerable.

It is a cannabalistic larva when kept too crowded, and, like most other species, requires a good deal of room to avoid developing this propensity. It should be mentioned that the setæ on the head, and from the numerous warts on all surfaces of the body, were still in existence. Also that the markings on the ventral area were as before, only that the two dark lines upon it were now almost continuous, and were thicker and darker in effect. The space between them was occupied by a strong accentuation of the reddish tint before alluded to.

By July 12th the first of the larvæ commenced spinning its slight pupal cocoon amongst the dried leaves of the foodplant left at the bottom of the cage, very little feeding having been done since the last record on the fifth of this month. The intervening time had been spent in sitting motionless at rest, and the movement that was indulged in was nocturnal, to seek the slight feeding necessary. The appearance of the larva had not altered much. It had attained a length of 2¼in., and the general tone of its colour was a rich mottled brown. The numerous projections were more pronounced, not only the projecting humps and ridges, but the smaller warts on the dorsal face of the segments, particularly those on the 6th, 7th and 9th abdominal ones. The light elongated spots on the lateral faces of the dorsal ridges, the spiracular projections on abdominal segments 7 and 8, and the outer face of the abdominal claspers had become more distinctly marked, and were of a light sienna colour, while the dark blotches by which they were surrounded were of a deep purplish-brown. The transverse skinfolds between the segments were emphatically incised, and the general aspect of the larva was corrugated to a greater extent than at any time hitherto. While at rest it had a habit of deflecting in line at the marking on the third abdominal segment, or occasionally at the first, and bending itself from these points backwards and upwards, which gave additional resemblance to a woody twig. If disturbed by being touched, it would jerk itself backwards with a sharp movement, and sway from side to side very quickly once or twice. The ventral surface was much more sober in colour now, and the red tinge between the two medioventral lines faded almost to obliteration. The colour of the larva as a whole, had, in fact, degenerated to a mottled-coloured brown with dark blotches, picked out with the lighter sienna-coloured spots and markings. This was its final state before pupation.

COLEOPTERA.

CALOSOMA SYCOPHANTA, L., AT BATTLE.—On August 3rd, I was at Battle, and, while walking down the path from Battle Abbey to the Powder Mill Ponds, my wife drew my attention to a beetle which was running on the pathway. To my great delight, I saw it was a fine specimen of *Calosoma sycophanta*. Its occurrence in this locality—some seven miles inland—makes this record additionally interesting.—W. H. BENNETT, F.E.S., 15, Wellington Place, Hastings.

GYNANDROPTHALMA AFFINIS.—It will be of interest to all coleopterists to know that I have again taken this species at Wychwood Forest. Towards the end of June, when the weather at last became fine, a day or two spent in this old forest proved that the species is by no means uncommon.—W. HOLLAND, University Museum, Oxford.

COLEOPTERA IN BERKSHIRE.—When Mr. Donisthorpe asked me for a note on the coleoptera that I have taken in this neighbourhood this year, I seriously thought of giving him a note on what I had *not* seen. It has certainly been interesting to note which insects have suffered most from the bad weather. The most notable absentee is *Leptura livida*, F., which is generally very common here on *Achillea millefolium* at the end of summer. I have not seen a single specimen this year. On the whole, however, I think the beetles whose larvæ live in wood have done well. In June, I found *Conopalpus testaceus*, Ol., common in small branches of oak on the ground, and probably could have taken any number. In March, I took one *Oxylaemus variolosus*, Duft., in one of these small branches. Some good things have turned up in damp wood with fungus on it—*viz.*, *Diphyllus lunatus*, F., *Anommatus 12-striatus*, Müll., *Sphindus dubius*, Gyll., *Liodes orbicularis*, Herbst. In the same small wood in which I took the last four species I took last year two *Diplocoelus fagi*, Guir. I took a few more this spring, but on July 20th I found a small beech tree, just dead, with any number of this species and its larvæ under small pieces of the outer bark. *Enicmus brevicornis*, Mann, was also crawling in numbers over the tree. *Tillus elongatus*, L., also occurred in the same wood. I have worked the *Cossus*-affected trees, out of which I took *Epuraea diffusa*, Bris., commonly last year, but have found it decidedly rare this year. Once, however, I took several *Epuraea decemguttata*, F., which was a rare species last year. *Thalycra sericea*, Sturm, has also turned up once again. General sweeping has been singularly unproductive. *Abdera bifasciata*, Marsh., *Chaetocnema subcoerulea*, Kuts., are the best species I have taken. By sweeping very short grass in a wood I have taken *Amphicyllis globus*, F., *Colon dentipes*, Sahl., *Aspidiphorus orbiculatus*, Gyll. (one specimen). This last I have taken in numbers since, in the New Forest, in a small powdery fungus. In the spring I took several *Odacantha melanura*, Payk., and *Paederus riparius*, L., in a very promising-looking marsh. I hope to take some more Fen things during the summer. The whole place has, however, been under water since the heavy rains. *Orthoperus mundus*, Matth., is probably common in the neighbourhood, as I have taken it on four separate occasions. *Trichopteryx dispar*, Matth., and *Quedius ventralis*, Ar., have also turned up.—NORMAN H. JOY, Bradfield. *July 5th*, 1908.

COLEOPTERA IN SCOTLAND.—On June 21st I had a long walk across country from Hawthornden station to Gorebridge station, collecting on the way by sweeping the roadside flowers in the many pretty lanes I traversed. The most notable insects were the Telephorids, which were in great abundance, the following being all common:—*Podabrus alpinus*, Pk., *Telephorus pellucidus*, F., *T. nigricans*, Müll., *T. bicolor*, F., *T. flavilabris*, Fall., and *Rhagonycha limbata*, Th. Amongst others taken were *Helodes minuta*, L. (common on a steep wet bank), *Limonius minutus*, L., *Anthophagus testaceus*, Gr., *Anthobium torquatum*, Marsh., *A. sorbi*, Gyll., *Apion ervi*, Kirb. On the 28th I paid a visit, with Mr. Donisthorpe, who was then staying with me, to Hawthornden, but the day was very unfavourable for collecting. We found, however, *Anthophagus testaceus*, Gr., again in plenty, and several species of *Malthodes*, one of which appears to be *pellucidus*, Kies. During this month I bred *Ernobius mollis*, L., the larvæ and pupæ of which were taken in abundance under the bark of fir that had been used to make a small bridge over the Braid burn, on the outskirts of Edinburgh. In July, I was so occupied with professional work that I had to give up collecting, but on the 3rd, during a walk through Dalmeny Park, I swept up *Malthinus frontalis*, Marsh., only recorded by Fowler in Scotland, from the Highlands, and *Anaspis rufilabris*, Gyll. On the 30th, I had a few hours' collecting with Mr. Black, in the Peebles district, but the day was very stormy, and there had been very heavy rain during the night, so our results were poor in the extreme. The following occurred:—*Stenus declaratus*, Er., *S. ossium*, Steph., *Anisotoma calcarata*, Er., *Malthodes flavoguttatus*, Kies., *Apion ervi*, Kirb., *A. humile*, Germ., *Sitones flavescens*, Marsh., all by sweeping, and *Encephalus complicans*, Westw., in moss. In August I have had a little more leisure, and have added a few good insects to my Scotch collection. On the 1st *Ceuthorhynchus ericae*, Gyll., was common on the heather in the Pentlands. At Hawthornden, on the 11th, when I had the pleasure of Mr. Tomlin's company, *Anthophagus testaceus*, Grav., was again very common, both by sweeping and beating, and the following amongst others were also taken:—*Apion pallipes*, Kirb., fairly common on *Mercurialis perennis*; the only Scotch record by Fowler is that of Dr. Sharp, who took it commonly at Eskbank, in 1865, on *Allium*; this locality is only a few miles away from Hawthornden; *Coeliodes quercus*, F., this insect was swept up under or beaten off hazels; *Atomaria atricapilla*, Steph., and *Cryptophagus setulosus*, Sturm., by sweeping amongst long dry grass. On the 17th, and again on the 22nd, I visited Longniddry, collecting by sweeping under the hedges and on the coast line to Aberlady. Off *Sisymbrium officinale* came all the insects I found on that plant in September, 1902, in this neighbourhood, and off thistles, &c., I got *Ceuthorhynchidius versicolor*, Bris., *Apion carduorum*, Kirb., *Sphaeroderma cardui*, Gyll., &c.; off *Ononis spinosa* came *Apion ononis*, Kirb., in plenty, and off mallows *Apion aeneum*, F., and *A. radiolus*, Kirb., while clover produced *A. flavipes*, F., in profusion. The Hawthornden district, on the 24th, by beating *Vicia cracca* growing in the hedges, produced *Apion viciae*, Pk., and *A. ervi*, Kirb., in numbers, with *A. spencei*, Kirb., very rarely; *A. ervi* also came off *Lathyrus pratensis*, which was growing freely by the roadside.—(Professor) T. Hudson Beare, F.E.S., 10, Regent Terrace, Edinburgh. *August 28th*, 1903.

SCIENTIFIC NOTES AND OBSERVATIONS.

Variations confined to one sex.—Some months ago a paper by the Rev. G. H. Raynor appeared in the *Ent. Record*, dealing with the inheritance of var. *flavofasciata* ("*lacticolor*") of *Abraxas grossulariata*. This variety is confined to the female sex, and the facts appeared of such great theoretical interest that I have been collecting analogous cases for comparison. It appears that while varieties confined to the female are comparatively common in lepidoptera, *e.g.*, var. *valezina* of *Dryas paphia*, the ♀ vars. in the genus *Colias*, &c., there are yet very few well-defined cases of a variety occurring in the male only. Where the ♂ differs widely from the ♀, it may, in some instances, take on the ♀ form, *e.g.*, in *Hepialus humuli* from Shetland, and in other orders of insects where the sexes differ widely, the males may be more or less dimorphic, as in the jaws of stag-beetles or the forceps of earwigs, but I can find no instance of a variety confined to the male comparable with those mentioned above, which occur in the female only. Can any reader of the *Ent. Record* give an instance of an exclusively male variety, either from his own experience or from the literature of the subject? I should be very grateful if any one could help me with information in this matter.—L. Doncaster, M.A., King's College, Cambridge. [The nearest approach to the conditions which Mr. Doncaster wishes to illustrate, known to us, are to be found in *Spilosoma mendica*. Here we have a very distinct and uniform female which appears constant everywhere, whilst the ♂ s are either (1) of the normal dark sooty coloration, (2) of a pale buff coloration. There are, we believe, no intermediates between these ♂ forms. We are not sure, however, whether the areas of these ♂ s overlap, *i.e.*, whether the dark and pale males both occur in the same district with a white ♀, or whether they are confined to different districts. It would be inaccurate, in our opinion, to suppose that we have in the pale-buff ♂ s an approach (*sens. strict.*) to the ♀ form. What we appear to have is an atavic return to a common ♂ buff coloration for the genus, well-exhibited now in the ♂ of *S. lubricipeda*, and not at all infrequent as a local aberrational development in both sexes of *S. menthastri*. A somewhat similar dimorphic condition occurs in the ♂ s of *Cosmotriche potatoria*.—Ed.]

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Substitute food for the larva of Thestor ballus.—It may be interesting to entomologists to know that the larvæ of *Thestor ballus* can be reared in confinement on *Anthyllis vulneraria*. I had quantities of ova laid last April by seven females on potted plants of *Lotus hispi-*

dus, but the plants that I brought home were devoured by the larvæ before the latter were full-fed, and I brought two only through, due to the fact that for a time I failed to find a British plant that the larvæ would eat. When offered them, the two survivors took at once to the flower-heads and seed-capsules of *Anthyllis vulneraria* on which I placed them.—W. H. St. Quintin, Scampton Hall, Rillington, York. *July 25th*, 1903.

Eggs of Lepidoptera.—*Chrysophanus alciphron* var. *gordius*.—Exceedingly minute for the size of the butterfly, almost regularly domed from base to apex, forming as nearly as possible a flattened hemisphere, but slightly contracted at its base. There are five almost complete circles of large, deep polygonal cells, somewhat irregular, with raised ridges, lessening in size towards the apical area, which appears to be made up of two similar circles of much smaller cells. The micropyle forms a minute central apical depression with a radiating series of more longitudinal cells forming the central stella. The shell is opaque, and the egg dull whitish in colour, showing no signs of the contained larva until the latter puts its dark head through the hole that it makes in the micropylar area in order to escape therefrom. (The egg received July 6th, described July 8th, 1903, under an ordinary hand lens.) [The egg was received from Mr. G. O. Sloper, who obtained it on July 2nd, 1903, having watched the ♀ lay it on a stem of sorrel at Martigny. He remarks on its being very small for the size of the insect, and states that it is difficult to obtain the eggs of this species because (1) The ♀s go through the pantomime of laying, but frequently do not lay. (2) They select masses of sorrel on steep skrees on which to lay their eggs. (3) It is difficult to keep the eye on the particular plant chosen by the ♀ when climbing.]

Chysophanus hippothoe.—Mr. Sloper obtained three eggs, which he writes me were laid on July 10th. On the 13th he was sending them, and found one already hatched. I could only find one, with the upper micropylar area eaten out, in the quill on arrival. Of this I made the following notes:—The egg forms a small flat dome, attached by the whole of its circular base to the upper edge of a sorrel leaf. The sides are encircled by three rows of deep polygonal (roughly hexagonal) cells, with conspicuous raised edges. The larva, on hatching, eats away the egg-shell to the upper edge of the topmost of these three rows. The empty egg-shell is opaque white in colour.

Pararge maera.—Yellow in colour, forming roughly a truncated cone, with height about equal to diameter; slightly drawn in at base, so that basal and apical diameters are almost equal (the egg has, therefore, an almost cylindrical aspect); the shell is somewhat shiny, and is traversed from base to apex by a number of fine longitudinal ribs, which appear little more than wrinkles. The apical area appears moderately flattened, and there is a small central depression, at the bottom of which the micropyle is placed. Certain areas appear almost clear and transparent, others are more opaque, due to the embryo within. One side of the egg is somewhat depressed, but appears not to affect the embryo. The egg is laid on the front of a very young lamina of grass (but Mr. Sloper says there appears to be no very definite position on the blade affected by the female when laying). The newly-hatched larva eats the whole of the eggshell (which appears to be very thin and transparent) except that part of the base by which the egg is attached to the foodplant. (Egg received from Mr. Sloper on July 6th, described July 8th, 1908, under an ordinary hand lens.)—J. W. Tutt.

Pupa of Satyrus hermione.—18mm. long, 8·5mm. wide at broadest part, *i.e.*, at 3rd abdominal segment, where the wings are very bulging. The head is frontal, prominently extended beyond the prothorax; the mesothorax also prominent and swollen; the metathorax short, with well-developed wing-bases; the abdominal segments well-marked, the incisional lines conspicuous, dark in colour, and with an apparent narrow fold of skin; the cremaster formed of two short, blunt, rounded, smooth points, slightly turned ventrally; the colour of the chitin reddish-brown; the thoracic areas quite transparent, the abdominal more opaque, the surface comparatively smooth and shiny; the wings are large, prominent, and somewhat transparent, with a greenish tinge; the neuration exhibited by somewhat pale (possibly due to light reflection) ridges; the appendages smooth, so that the anterior and middle parts of venter form an almost smooth surface. *Dorsally:* The head rounded, frontal, with very distinct imaginal features looked at frontally; the bases of antennæ directly above the frontal line. The prothorax narrow, with a clearly-defined median suture continued backwards on the mesothorax. The prothoracic spiracles comparatively small (for the group to which the species belongs), black-edged, pushed well back on the front edge of the mesothorax, the indistinct lumen facing frontally, the lower edge scarcely reaching to the antenna. The mesothorax particularly prominent in the median part of the dorsum, the bases of the forewings prominent; two or three small irregular black patches on the chitin quite on the front of this segment. The metathorax narrow, medially folded well under the prominent mesothorax. The 9 abdominal segments, as well as the 10th (anal) one, very distinctly marked, increasing in size from the 1st to the 3rd and 4th, which are almost of the same width, and then narrowing to the anal segment, the two terminal cremastral points of which are very distinct. The mediodorsal suture of the thoracic segments is continued as a dark mediodorsal line down the abdominal segments. *Ventrally:* The frons is very prominent, the mouthparts distinct, the glazed eye large, and separated from the surrounding structures by a fine black line. The maxillæ are wide at the base, and extend directly to the end of the wings. Next the maxillæ, the 1st pair of legs is very little shown; the 2nd pair of legs is larger, and ends just short of the antennæ; the antennæ are slender, very well segmented, the apices ending some distance short of the wing-tips. The appendages are separated by fine black sutural lines. The wing-bases form a sort of low shoulder, and the outer half of the wings bulge very much compared with the basal, the swollen portion being of a distinct greenish hue, which shows through the wings and involves the corresponding portion of the legs, maxillæ, and antennæ. Poulton's line is at a considerable distance from the edge of the forewings, the raised nervures ending thereat. The apices of the wings extend just beyond the abdominal incision, 4-5, on the anterior edge of the 5th abdominal segment. The 5th, 6th, and 7th abdominal segments are united, but clearly defined by their incisions, but the 8th, 9th, and 10th are very closely welded, especially in the median area, where are the reproductive organs, although laterally their distinction is evident; the anus is distinct, and the cremaster shows as a short, broad, terminal spike, black in colour, and ends in two blunt points, separated by a marked median depression. *Laterally:* The frons is conspicuous; the glazed eye appears to be somewhat depressed; the bases of the antennæ have scarcely any traces of the segmentation that becomes marked towards the centre and apex; the lumen of the prothoracic spiracle is covered by a slightly projecting ear-like lobe; the base of the forewing forms a marked shoulder; the hindwing, broader at base, shows as a narrow slip to the end of the inner margin, ending at the anal angle; the 2nd abdominal spiracle, entirely, and the 3rd abdominal spiracle, partly, covered by the hindwing; the 4th to 8th abdominal spiracles rather small, with a more solid chitinous rim of the tint of the ordinary covering, the lumina of the 3rd to 7th abdominals guarded by a tiny longitudinal raised rim of greyer colour than rest of spiracle; the cremaster with a quite blunt appearance when viewed laterally.—[Described July 10th, 1903, with ordinary pocket lens. The pupa received from Mr. H. Powell, Hyères].—J. W. Tutt.

Pupa of Melanargia galathea var. procida.—[Received from Mr. H. Powell, June 14th, 1903.]—Semitranslucent texture, pale terra-cotta colour, almost flesh-colour, having a strong pinky tinge. Head, wings, and appendages almost transparent, and these form the greater part of the pupal surface. Dorsum of thorax somewhat similar, but rather opaque; abdomen yellower and solider looking. Length 14·5mm., of which from front to end of wings and proboscis is 12·3mm.; at 3mm. from front the diameter is 4·5mm., thence it enlarges quite regularly to 10mm. from front, where the diameter is 6mm. at forward bulge of wings, and thence it tapers rapidly and regularly to base of anal spike, 14mm., but rather more in front. Ventral face of anal spike is rather behind, but parallel with, axis of pupa; dorsal face curved, but not in continuation of dorsal aspect of pupa, from which it breaks a little by some straightening of the line, giving a reentering curvature at its base. Ventral line straight (along proboscis) from within 1mm. or 2mm. of front, down to 9mm. from front, where dorsal curvature begins; highest dorsal point of thorax 3·5mm. from front, whence it slopes down to apex in a regular curve. Metathorax gives a definite waist, a hollow in the dorsal outline between the points 3·5mm. and 6·5mm. from front, and 0·5mm. deep at 5mm. from front. From points 7mm.-10mm. from the front, the dorsal line flat, then, after a sharp curve, slopes rather than curves to base of spike. The wings wrap very far round the pupa, leaving a narrow dorsum, so that, viewed dorsally, both wings are visible at once right down to 4th abdominal segment, and, seen laterally at 5mm. from front (bottom of waist), 4mm. of antero-posterior diameter is wing, 0·5mm. is 1st abdominal segment, and at 9mm. (nearly thickest part of pupa), 5·0mm. is wing, 1·3mm. is 3rd abdominal segment. The pupa has no movable joints, and its only dark portions are the anal spike and large ear-like black lappets, behind 1st spiracles. These are very conspicuous and marked features of the pupa; they stand out about 0·4mm. and are about 0·6mm. wide; rounded, they are attached to the mesothorax, forming the posterior lip of the spiracle; at first view, they present a flat face, looking directly forwards, and this is the case, except that a deep hollow leading to spiracle is scooped out of the centre of the flat area. The prothorax has no similar structure at all. The surface of the ear is closely and minutely pitted. The other dark portion is the anal spike, which is of ordinary chitinous brown. The anal spike is rather broad, and sinks into the general surface by brown wrinklings that make it difficult to say whether it should be called 0·5mm. or 1·0mm. long. Its ventral face forms a rather deep recess, with a distad face for the anal scar, and nearly at right angles to this a ventrad face like an arched alcove, with prominent corrugated sides, and beyond it a short square piece, longitudinally striate, terminating in a transverse ridge, the end of the spike, about 0·8mm. across, and carrying half a dozen or so (some seem broken off) minute straight spines, not hooked in any way. The ♂ tubercles are obvious, but are low, flat, and colourless, and quite close to the anal scar, and, between the ends of pillars flanking the ventral hollow of the anal spine. This is all, so to speak, included in the fact that of the 14·5mm. the pupa is long, the ventral length of the last six abdominal segments (including anal spike 1mm.) is only 2·8mm. The bases of the antennæ are very close together dorsally. The first leg is a very small scrap 1·5mm. long, the second 7·0mm. The antennæ just fall short (by 0·8mm.) of wings and maxillæ. The cheeks (mandibles?) meet in the middle line, cutting off the labrum (as a triangular piece) from the maxillæ. The glazed eyes are well marked, and face a little forward of ventrad. Maxillæ, legs, and antennæ have transverse markings, faint, but slightly darker than ground, and apparently accompanied by an impressed line. Those on antennæ very regular, marking segments. The wings are more distinctly marked by transverse waved lines, in something of the manner of the wing of *Cossus*, purely transverse basally, centrally rather as netting by the addition of a good many longitudinal lines, and fading out in the hind fourth of the wing. The lines are partly in colour partly in texture. The neuration is marked by raised ribs, but so slight that one can hardly be quite sure they exist. The wings are so transparent that the tracheæ of the primitive neuration are easily seen, at least towards the hind margin, with some difficulty as to light also towards the base, and some possibility of confusion from those of the hindwing being also more or less visible. Poulton's line is marked by a difference of tone and a suggestion of an angle, quite distinct, but how is not very evident. Hindwing pushes back spiracle of 2nd abdominal, and ends behind that of 3rd. The dorsal sculpture is very fine wrinkling, rather transverse in front, tending to be longitudinal behind. There is down the abdomen a faint dorsal line, darker, with a tendency to a yellow patch on each segment. There is a similar yellow tendency as a subdorsal line, and below this (line of tubercle iii?) a shade similar to the dorsal one, and like it marked on 6, 7 and 8, by an actual tendency to a faint darker coloration.—T. A. CHAPMAN, M.D., Betula, Reigate.

PRACTICAL HINTS[*].

Field work for September and October.

1.—Towards the end of September the pupæ—and in late seasons larvæ—of *Peronea logiana* may be found in "pockets" in screwed-up leaves of *Viburnum lantana*. Unless the pupæ are removed from the leaves, crippled imagines are likely to be bred.

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[*] "Practical Hints for the Field Lepidopterist," Pts. I and II each contain some 1250 practical hints similar to these, but relating chiefly to the Macrolepidoptera. *Interleaved for collector's own notes.* Price 6s. each part.

2.—During the last fortnight of September larvæ of *Phoxopteryx derasana* are to be obtained on *Rhamnus frangula*. These larvæ draw together the sides of a leaf, causing it to strongly resemble the seed-vessel of a leguminous plant. Larvæ must be kept out of doors during the winter, as they do not pupate until the spring, and if kept in doors would in all probability die.

3.—*Phoxopteryx upupana* larvæ occur on *Betula alba* during September. A good account of their manner of feeding will be found in the *Ent. Mo. Mag.*, vol. xxvi., p. 192. The treatment of the larvæ is similar to those of *P. derasana*.

4.—At the end of September imagines of *Paedisca ophthalmicana* occur on the trunks of various species of poplar. It is best to work for them in the morning, and, if possible, to select a dull day; after mid-day, or in bright weather, they give one little chance to "box" them, being very skittish and having an unpleasant habit of flying off so as to place the trunk between themselves and their would-be captor.

5.—Larvæ of *Stigmonota weirana* are to be found from the commencement of October between united leaves of *Fagus sylvatica*. The joined leaves are easily seen by standing under the trees and looking up through their branches.

6.—If the discoloured rose-hips are gathered during the first fortnight of October and enclosed in a box with pieces of virgin cork, a goodly supply of *Stigmonota germarana* will most likely be the result. When the larvæ have formed their cocoons in the cork they must be put out of doors.

7.—The last week in September is the best time to collect larvæ of *Catoptria albersana*, which are to be found in folded leaves of *Lonicera periclymenum*.

8.—By gathering seed-heads of *Lactuca virosa* from the middle to the end of September, the larvæ of *Catoptria conterminana* may be secured. Place the seed-heads in a flower-pot half filled with light soil, and the larvæ will readily pupate in it.

9.—A bag full of flower-heads of *Artemisia maritima* collected from a salt-marsh will generally result in a quantity of *Catoptria wimmerana* being reared.

10.—*Xylopoda pariana* is now out, and in its restricted haunts is often common. Like *X. fabriciana* it is fond of sitting (in the sunshine) on flowers of *Compositae*. During sunless days it may be obtained by beating thatches into a net or an umbrella.

11.—During October a visit to a pond or stream in which *Alisma plantago* is growing will often result in larvæ of *Eupoecilia alismana* being found in the stems of the plants. Tenanted stems should be tied into a bundle and left exposed to the weather until the following May.

12.—The larvæ of *Nematois scabiosellus* are to be secured at this season feeding on the seeds of *Scabiosa arvensis*. The species is almost entirely confined to downs.

13.—Larvæ of *Swammerdammia griseocapitella* occur about mid-October on *Betula alba*. The larvæ spin silken pads on the upper surfaces of leaves, causing them to slightly contract. The best time to find them is in the early morning, as then the dew is resting on the silken pads, which are made most conspicuous.

14.—About the middle of October larvæ of *Coleophora fuscocuprella* are making numerous small blotches on the under-surfaces of leaves of *Corylus avellana.* These larvæ should be wintered in the open, as pupation does not take place until the following spring. It is useless to collect larvæ found feeding in the early summer, as these, without exception, contain parasites.

15.—At this season leaves of all trees and low-growing plants should be most carefully examined for various *Lithocolletis*, and *Nepticula* mines and blotches.

NOTES ON COLLECTING, Etc.

Scarcity of Theclid larvæ in 1903.—This year there has been, according to my experience, a great scarcity of Theclid larvæ. On May 10th I rode to Monk's Wood, Huntingdonshire, and beat for two or three hours. Very few larvæ of any description fell into the tray, and, of the species that was the main object of the outing, *viz.*, *Thecla pruni*, I did not get a single larva. The minuteness of those larvæ which did fall into the tray led me to believe that I was too early, so on May 31st I again visited Monk's Wood to have another try, but, although I beat for several hours, I did not obtain a single larva of either *T. pruni* or *Zephyrus betulae.* Not to be beaten (like the larvæ) I again returned on June 11th, hoping this time to get a take of *Z. betulae*, but alas, for my hopes, three hours' hard beating brought one *Z. betulae* from *Prunus communis*, and another from *Quercus robur.* On July 12th I again visited the wood, this time for the imagines of *T. pruni*; my take for the whole day was six males and one female.—E. Crisp, 31, Union Road, Cambridge.

Exposed position for puparia of Porthetria dispar.—Whilst walking down from Evolène to Useigne, on the morning of August 13th, I discovered, on a couple of long boards that were being used as fencing at the side of the road, about two dozen puparia of *Porthetria dispar.* The cocoon was of the flimsiest possible character, and, in two or three cases, the pupæ hung suspended by the cremastral appendages. Most of the imagines had emerged, but seven apparently full ones were taken, and from these I have bred, to date, six fine ichneumons, one species with a broad white ring on the antennæ, and yesterday a single ♀ *P. dispar* emerged.—J. W. Tutt. *August 25th*, 1903.

Lepidoptera at Clandon.—On July 18th eight members of the City of London Entomological Society visited Clandon. Although it rained for nearly an hour after arrival, a gleam of sunshine for some five minutes brought out a large number of insects, and it was really surprising to notice how rapidly they appeared on the wing. Four *Argynnis aglaia* were observed almost immediately. *Enodia hyperanthus* was swarming, and in fresh condition ; *Epinephele tithonus* was just out, and in exceedingly good order, whilst *E. janira* was abundant, and flying even in the rain. *Thymelicus thaumas* (*linea*) was abundant and fresh, whilst a ♂ *Polyommatus corydon* was in the nature of a surprise, the date being exceedingly early—the commencement of August is a very fair date. *Metrocampa margaritaria*, newly-emerged, was taken on a pine-trunk, and of such a splendid green tint as is rarely seen in nature; whilst a specimen of Aplecta nebulosa was also taken at rest on pine. Larvæ of *Euchelia jacobaeae* were on every head of ragwort. Other species were taken by other members of the party. No doubt a visit at this time of the year, under more sunny conditions, would provide a good bag for everyone.—C. P. Pickett, F.E.S., 99, Dawlish Road, Leyton. *July 24th*, 1903.

On the pairing of Angerona prunaria.—I have this year obtained two batches of fertile ova from two females fertilised by the same male, the pairings having taken place on June 14th and 15th. During the last five years I have had several males pair a second time, but in every case, except this, so far as I remember, the second pairing has been infertile. I have also had five pairings this year result in infertile ova, although copulation, in every case, lasted from twelve to twenty-four hours, and the normal number of eggs was laid. Probably their being the fifth year's inbred stock had something to do with this, the result possibly being due to some weakness, although the moths paired were among the largest I have ever bred.—Ibid.

CURRENT NOTES.

A meeting of the Entomological Club was held at the Hand and Spear Hotel, Weybridge, on the evening of July 17th, when Mr. G. T. Porritt was the host. Mr. Porritt is to be congratulated on the selection of a lovely spot, dear to the hearts of naturalists, on the borders of a fine stretch of heather-clad moor, at which to entertain his friends. Supper was served at 7 p.m. That we were ourselves quite unavoidably prevented from attending this most enjoyable meeting is a matter of the greatest regret to us personally. The meetings of the Entomological Club are the only feature we have now to represent the social life of our entomologists. The South London Entomological Society no longer holds its annual dinner, and the Entomological Society of London has not yet seen its way to have one.

Our respected correspondent, Mr. W. D. Kearfott, proposes to attempt a revision of the North American Tortricids, in which little has been done now for some years. He has already a large number of North American species, and some 150 species belonging to the Continent of Europe. He is desirous of adding to the latter (including British) as many species as possible. Anyone who has duplicates of Continental and British species to spare would be doing much to forward our knowledge of the group if they would forward the same to Mr. W. D. Kearfott, 114, 116, and 118, Liberty Street, New York, U.S.A.

On July 4th the annual visit of the members of Council and other Fellows of the Entomological Society of London took place, at the kind invitation of Professor E. B. Poulton. All met at the Museum in the afternoon, where tea was dispensed by Mrs. and Miss Poulton. In the evening the whole party dined at Jesus College, being Professor Poulton's guests, and a most enjoyable evening was spent. On Sunday, besides interesting visits to the Museum, the usual tea party was held up the River Chard in the afternoon. At night, at the invitation of Dr. Dixey, all met at Wadham College. The following entomologists were present:—Messrs. H. Rowland Brown, A. J. Chitty, H. St. J. K. Donisthorpe, H. Druce, H. Goss, R. McLachlan, S. A. Neave, Edward Saunders, Professor Meldola, and the Rev. F. D. Morice.

M. Henri de Saussure has recently published an article which adds materially to our knowledge of the *Eumastacidae*. It is entitled, "Analecta Entomologica, II. Notice sur la Tribu des Eumastaciens" (*Revue Suisse de Zoologie*, T. ii., 1903, pp. 43-112, pl. 13). The author adds a new species to the recently restored genus, *Phyllochoreia*, Westwood, and, in a synoptical table, suggests a new genus for the two species, *Plagiotriptus rotundifrons*, Burr, and *P. insularis*, Burr, but he neither characterises (except in the table) nor names it. *Choroetypus* he again examines; he comes to the conclusion that *C. fenestratus* of Brunner (from Borneo) is a distinct species, and that the *C. fenestratus* of Burr is probably identical with *C. haanii*, Brunner, of which *C. gallinaceus*, Fabr., of Brunner, is probably a variety, rightly united by Burr with the *C. fenestratus* of Brunner. As a matter of fact, the *C. fenestratus* of Serville, which is the type of the genus, probably includes several species, hence the consequent confusion; the real *C. fenestratus* of Serville is a native of India, whereas the *C. fenestratus* of Brunner and Burr is from Borneo; Serville's species, also, has the distinct transparent spot through the pronotum, which Burr suggests may be highly variable, and too unstable to be used as a specific character. De Saussure appears to have found the real *C. fenestratus* of Serville, that is the Indian form; while the specimens recorded under this name from Borneo by Brunner and Burr are probably a distinct species, very likely *C. haanii*, Brunner, or some allied form. The *C. fenestratus* of de Haan appears certainly to be the same as *C. haanii* of Brunner, quite distinct from Serville's species. M. de Saussure then considers the true identity of *C. gallinaceus*, Fabr. He agrees with Brunner in separating *C. gallinaceus* from *C. monachus*; Burr unites Brunner's *C. monachus* with his *C. gallinaceus*, Haan; de Saussure decides that the *C. gallinaceus* of de Haan and Burr is a true species, namely, *C. monachus*, Brunner, while *C. gallinaceus* of Brunner is a distinct and good species; *C. ceylonicus*, Karsch, he ranges in *Orchetypus*; and to *Scirtotypus* he adds a species, *S. finoti*, from the Gaboon, the first African species of the genus; to the *Erianthites* he adds the genus *Hemierianthus*, with the single species *H. gabonicus*, Sauss., the first of the family to be described from Africa; to *Erianthus* he adds four new species, all Asiatic. The difficult genus *Erucius*, Stål., is rearranged, and two new species from Borneo are described. The curious South Indian genus *Mastacides*, Bolivar, receives a new species from the same locality. The family *Episactites* is enriched by *Parepisactus saltator*, from Costa Rica and Guatemala, and by an Old World form, *Mallagassa* (n.g.) *coniceps*, from Madagascar. Among the *Eumastacites* proper, *E. dentatus*, from Costa Rica, is new, as also *Paramastax brevipennis*, *P. taeniata*, and *P. facialis*, all from tropical America; a new genus, named *Scirtomastax*, is erected for an apterous form, *S. cordillerae*, in which we must probably range the apterous forms *Eumastax surinama* and *E. rosenbergi*, Burr. An anomalous genus, *Xanthomastax*, is erected for *X. crassipes*, from the Northern Celebes, and *X. furcatus*, from New Guinea. If this be a true member of this family, it is the first Old World form; it differs in many respects from true *Eumastax*, but appears to be more nearly allied to it than to any other genus. In the *Thericleites*, the genus *Euschmidtia* is enlarged by the addition of six species, all from Madagascar. The article from the *pen of this veteran* orthopterist is a welcome addition to our knowledge of the *Eumastacidæ*, which are some of the most curious and least-known grasshoppers.

In the *Ent. Mo. Mag.*, p. 197, Dr. Sharp adds a Syrphid fly, *Chamaesyrphus lusitanicus*, Mik, to the British list, on the strength of a specimen captured at Boat o'Garten, in Inverness, in July, 1902; previously it had only been recorded from Cintra.

Dr. Sharp also adds a longicorn, *Tetropium fuscum*, Fab., to the British list, a single specimen being taken on June 20th, 1903, at Brockenhurst.

A note by Mr. F. Littler (*Entom.*, p. 218) on the life-history of the Tasmanian Psychid, *Entometa ignobilis*, contains some remarkable statements, one of which reads as follows: "The males . . . . are remarkable for the length of the abdomen, the power they have of elongating it, and the manner in which *they lash it from side to side.* The ♀ s never leave the cases, but simply *place the posterior end of the abdomen close to the lower aperture of the case.* The ♂, when ready to change to the pupa state, reverses its position in the case, so that its head is close to the lower aperture. The ♀, on the other hand, *pupates in the same position as when a larva.* The young are brought forth, *not in the egg state, but as minute larvae,* which, if one is fortunate enough, *may be seen issuing in immense numbers from the body of the* ♀, each letting itself down by a slender thread of silk, it being soon wafted to some leaf of the tree." We should like some competent observer, who knows the peculiarities of the Psychid economy, to verify those statements that we have italicised. For ourselves, we can only say that it appears to us that Mr. Littler has accumulated almost all the errors of observation possible in the space at disposal, all of which, too, have been supposed to have been made before on other species, and all of which have been more than once rectified by careful observation. We have discussed in detail (*British Lepidoptera*, vol. ii): (1) The structure of the Psychid ♂ abdomen. (2) The position of the ♀ in the case when pairing takes place. (3) The reversal of all Psychid larvæ after finally spinning down the case, and before pupation. (4) The similarity of the ♀'s egg-mass with the ♀'s dead shrivelled body on top, to the newly-emerged ♀ full of eggs. (5) The hatching of the young larvæ from eggs laid within the case after copulation. Of course, it may be that Mr. Littler is right, only similar statements have always hitherto proved to be erroneous.

Comparatively few years ago the compilation of *A Catalogue of the Coccidae of the World** would not have been a very serious undertaking, but such enormous strides have been recently made in the study of these insects, that the work produced under this title by Mrs. Maria E. Fernald, M.A., occupies no fewer than 360 pages, and enumerates (with their synonymy) 1514 species. Apart from the great difficulty of determining which are really synonyms in such a confessedly puzzling group, a task that must have often taxed the talented authoress to the utmost, the mere compilation of the *Catalogue* is a gigantic piece of work. Her special reference to the help rendered by Professor T. D. A. Cockerell is, we doubt not, fully deserved. No one has done more than he in studying and helping others to study this difficult group, and the references in Mrs. Fernald's *Catalogue* illustrate the share that he, Mr. Ernest Green, and other workers have taken in the marvellous progress made in the knowledge of the Coccids during the last decade.

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NOTICE.—The Editor would like to have the names and addresses of lepidopterists who are willing to rear any surplus ova or larvæ that may come to him, and **who will write detailed notes of the species reared for publication.** Sometimes eggs and larvæ are received from correspondents which he has no time to deal with, and the knowledge of two or three keen lepidopterists, who would undertake the rearing *and* who would write their observations, would be at such times very useful.—*J. W. Tutt.*

EXCHANGE BASKETS.—March 14th, 1903, No. 1 basket.—Major Robertson, Messrs. Fox, Lofthouse, Studd, Riding, Day, Bower, Horne, Bowles, Mera. Mr. Bower sent No. 1 to Mr. Horne on May 28th, and Mr. Horne has never acknowledged receipt to Secretary. **Has anyone any later news of it?** No. 2 basket is at present in the Secretary's hands. [Members who wish to be missed must write to the name preceding their own on list, not to the Secretary]. The names of one or two new candidates for admission would be welcomed and room made as opportunity offered.

Duplicates.—Larvæ of Suasa. *Desiderata.*—Larvæ, pupæ, and ova.—*Samuel Walker, 15, Queen Anne's Road, York.*

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Duplicates.—Gnaphalii* (1), Craccæ* (dark), Cannæ*, Pulchellata *var.* Hebridium, Smaragdaria*, Asteris*, Abietaria*, Juniperata, &c.—*W. G. Sheldon, Helmath, Friends Road, Croydon.*

Duplicates.—Arion, Paphia, Polychloros*, Ditrapezium*, Baja*, Augur*, Papilionaria*, Pulchellata, Illunaria, Nupta, Moneta*. Larvæ.—Albicillata, Papilionaria. *Desiderata.*—Numerous in living stages.—*V. E. Shaw, Salisbury Road, Bexley, Kent.*

Duplicates.—Occulta, Tincta, Brunneata, Obfuscata, Ruficinctata (a few), Davus, Cassiope, Blandina, Festiva *var.* conflua, Plantaginis* (8 Scotch), Betularia *var.* doubledayaria, Tristata (white pins), Ulmata (white pins), Leucophaearia, Hispidus, Ambigua, Muralis, Tersata* (4), Miniosa* (6), Suffusa (4), Hera (7 slightly chipped), Haworthii, T. quercûs* (6), Callunæ* (1), Artemis (6), Chi *var.* olivacea (5), Instabilis (dark: south Yorkshire). Larvæ of Occulta. Ova of Obfuscata, Ruficintata (24). *Desiderata.*—Myopiformis, Formicæformis, Apiformis, Pruni, Auricoma, Alni, Venosa, Fluctuosa, Rufa, Obsoleta, Straminea, Ravida, Cinerea, Agathina, Caliginosa, Globulariæ, Leucographa, Oo, Paleacea, Pyralina, Chrysozona, Absynthii, Venustula, Argentula, Chaonia, Fluviata, Rufata, &c.—*E. A. Cockayne, 6, Tapton House Road, Sheffield.*

Duplicates.—Euphrosyne, Selene, Brunnea*, Rubricollis*, Extersaria*, Fasciaria*, Consonaria, Miniosa, Furca (2), Derasa, Smaragdaria, Sibylla*, Fimbria*, Quadra*, Cytisaria*, Monacha*, Russula, Orbona*. *Desiderata.*—Ova, larvæ, and pupæ of many species.—*G. T. Lyle, Brockenhurst.*

Duplicates.—Pupæ—Marginatus (Umbra), Mendica, Ochracea, Capsincola, Cucubali, Jacobææ. Larvæ—Unanimis. *Desiderata.*—Offers of ova, larvæ, pupæ, or if set imagines, butterflies only.—*J. W. Harrison, 2, Craig St., Birtley, R.S.O., Durham.*

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The book has been interleaved, so that collectors can add therein their own notes, dates, &c. Reference has been made easy, the notes for each month being classed under the superfamily heads to which they belong, *e.g.*, Tineina (unclassified), Tineides, Adelides, Plutellides, Elachistides, Gracillariides, Argyresthides, Coleophorides, Lithocolletides, Nepticulides, Tortricides, Pyraloides, Crambides, Pyralides, Drepanulides, Cymatophorides, Brephides, Geometrides, Pterophorides, Sesiides, Zeuzerides, Cochlidides, Psychides, Anthrocerides, Lachneides, Sphingides, Deltoides, Lymantriides, Nycteolides, Notodontides, Noctuides, Arctiides, Papilionides, &c. These will give an idea of the range covered by the notes.

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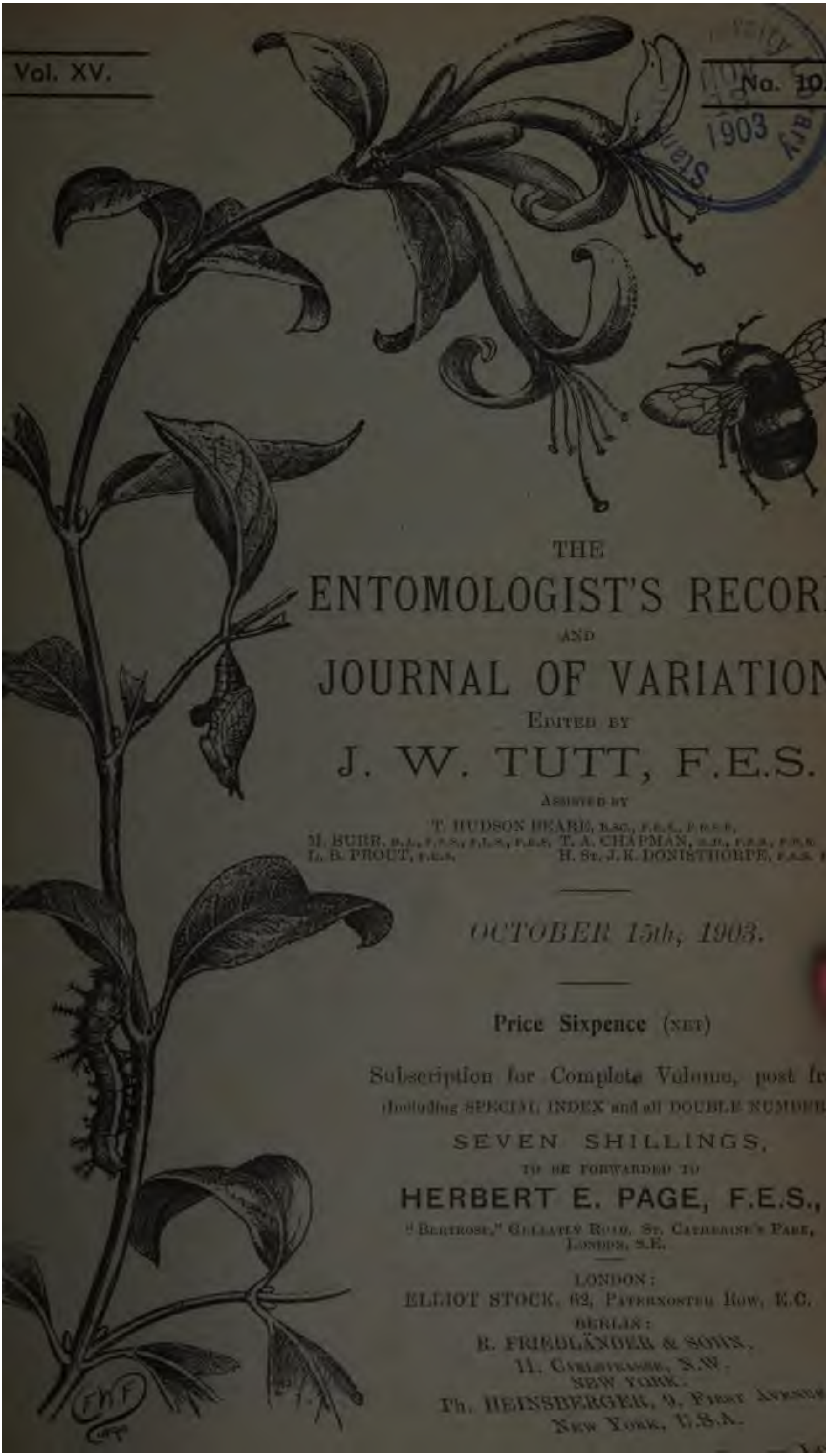

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A Trip to Corsica and the Alpes Maritimes.

PART I.—CORSICA.

By H. ROWLAND-BROWN, M.A., F.E.S.

This year the eccentricities of the British climate prompted an expedition far afield, and the decision to seek the sunny south was fully justified in so far as climatic conditions were concerned. The cold winds and low temperatures, the torrential downpours and leaden skies of early April, extended far beyond the usual northern limits; the dreary June weather, which put the finishing touches to our entomological hopes at home, played havoc also with winged creatures even as far south as the Mediterranean. The principal effect, however, was to retard species, and it was really remarkable to find in July, both in Corsica and the Alpes Maritimes, butterflies fresh on the wing, which are usually to be looked for at least a month sooner. Five or six hours' rain in a month's travel, compares well with the depressing inches of the British Islands, and it seems, therefore, the more remarkable too, that people, even those who have the misfortune not to collect insects, should persistently take their holidays within the rainy zone, nowhere more marked in a bad season than in the Alps of Central Europe. At least, that is my experience, and I resisted the temptation of more than one pleasant travelling invitation to strike out fresh woods and pastures new, in lands where the sun's "gold complexion" is more often "dimmed" than not. Let me take up the parable somewhere south of Lyons with a glimpse of *Gonepteryx cleopatra* and *Pontia daplidice*, seen from the train window in the neighbourhood of Avignon, on the early morning of July 10th, a morning cloudless and exhilarating with the dry, fine heat of the Midi. No time for entomological observations in Marseilles, but a visit to the Universal Provider, who sells white umbrellas for half-a-crown, luncheon at a cool hotel, and a drive to the docks, attended by every attempt at extortion, of which the combined genius of cabby and boatman is capable, even to the extent of swearing the pontoon bridge is broken, and a cockleshell the only means of reaching the Corsican steamer lying upon the opposite side of the basin. I protested a liking for ruins, but needless to add the bridge was sound enough, and eventually I found myself on the good ship "Thibet"—an improvement on the little, stuffy tramps that usually ply between Marseilles and Ajaccio—witnessed a gorgeous sunset upon the low red rocks and barren headlands of Provence, and as Mr. Pepys has it, 'so to bed' and slept so soundly, that they were warping us in at the quay-side when I awoke, to recognise Corsica by the fragrance of her million aromatic flowers. My Baedeker, an ancient edition, contained ample warning against the exactions of the longshore men. Happily I got my impedimenta through the Douane without trouble, and my baggage safely stowed in the railway-station, whence the train for Vizzavona would bear me at noon. The interval I proposed to fill up with my net and pill-boxes, and a large tin collecting-case provided for the reception of *Charaxes jasius*, and other wide-winged butterflies duly recorded in Kane, and the entomological contributions of Messrs. A. H. Jones and Standen. However, *C. jasius* did not put in an appearance here or anywhere else, and I was soon made aware that, as is the case with most insular faunæ, the likeliest looking localities are not unseldom unproductive. Following, meanwhile, a little path, which apparently led to the hills, through innumerable market-gardens with promising "wastes" well-flowered and treed, I took, or noticed almost at once, the truly Corsican *Pararge megaera* var. *tigelius*, but the brood was going over, and, expecting to find better specimens higher up (which I did not), I left this interesting form alone to investigate the few Lycænids on the wing. These consisted of a fine race of *Polyommatus icarus*, *P. hylas*, in prime condition, and a beautiful brightly bordered *P. astrarche*. *Pontia daplidice* was also common, with *Crysophanus dorilis* and *C. phlaeas* hardly distinguishable from the type. *Epinephele tithonus* with *E.* var. *hispulla* completed the butterflies I noticed on the wing, and, this being the case, I was not tempted to continue my investigations longer under the then vertical rays of the sun. The railway to Vizzavona runs for the greater part of the four hours' journey through the Maquis—with occasional breaks of chestnut-shaded villages, and, at the lower levels, eucalyptus-circled stations. First a gorgeous yellow-blossomed cactus, then arbutus, clematis and broom are the most conspicuous all along, and it is only on the southern side of the tunnel which pierces La Foce, that the pine-woods begin. The Hotel Monte d'Oro, where I stayed nearly a fortnight, is about three-quarters of an hour's walk through the forest from Vizzavona station, and, in the hot season, at any rate, is preferable, standing as it does at an altitude approaching 5000ft., to the more handily situated hotel, hard by the railway. I may add that M. Budtz, the proprietor and his wife, showed me every attention, and, having over many years entertained the passing bug-hunter, gave me a warm welcome and most comfortable quarters. By 5 o'clock I was on the mountain-side, and had made my first acquaintance with two more Corsican specialities, *Coenonympha corinna* and *Aglais urticae* var. *ichnusa*, the larvæ of which latter species swarmed on the nettles growing by the roadside. The hills, however (closely grazed and treeless above a very moderate level), did not prove productive at any time, but under the old fort which commands the pass, and on the "nek" itself, *Plebeius argus* (*aegon*) var. *corsica*, with its beautiful blue-splashed females, occurs in profusion, and *Chrysophanus phlaeas* var. *eleus* very dusky and well ocellated. An inspection made at home of my series, leads me to suppose that the type ♀ *P. argus* (*aegon* of our older lists) accompanies the variety, for I have one female which is certainly normal on the underside, but as certainly *corsica* on the upper, and seems more nearly to correspond to the var. *bella* of Herrich-Schäffer. Unfortunately I omitted to notice whether the type was flying in the lowlands at Ajaccio. My impression, however, is that, at this season, *corsica* is confined to the loftier and better-watered country, occurring most plentifully on the bracken and in other places on the hillsides. The number of insects peculiar to Corsica and Sardinia is limited. It was in search for one or two at least of them, that I set out on July 13th—a cloudless day—down towards Bocognano, the first station and a thriving village on the Ajaccio side of the Vizzavona tunnel. The first hour or so yielded next to nothing, beyond species already enumerated, but presently, passing towards the arbutus zone, where the railway banks were gay with the universal golden heliocrysum, matters mended somewhat. Here *Dryas paphia* turned up, and I was pleased to note that the form approached the var. *immaculata* (*anargyra*), some females being entirely devoid of the underside silver-wash. A backhander at a chance fritillary, which I supposed to be the more common *Issoria lathonia*, turned out to be a male of *Argynnis elisa*, a bold flyer, evidently fresh upon the wing, and thus, judging from previous records, close on a month late. This is a very difficult insect to catch, especially as, at this period, the males appear to settle but seldom, and once missed you will not easily have the opportunity of a second shot without patient waiting. Yet I found that with this, as with so many other butterflies, it appeared to have its "beat," and here, evey quarter of an hour or so, a specimen would crop up. On the railway-sleepers, which I found afterwards to be a favourite basking-place of the species, I took my first *Satyrus neomyris*, also perfectly fresh, and late in emergence. The "blues" were decidedly scarce—a fine bold form of *Polyommatus icarus* (the females remarkably large and distinct as to constitute a variety), *P. hylas*, *P. astrarche*, and a very occasional *P. baton*, constituted the bag. Unfortunately on this, as so many other days during my stay, the weather hazed in, and, next day, the only rain experienced in my five weeks' journeying swept up from the sea and enveloped La Foce in a misty deluge. A second visit to Ajaccio was as unsuccessful, entomologically, as my first, the lowland herbage being practically burnt up, and the thistles, to my surprise, unvisited even in the most promising spots. The 16th was probably the best day I had of many most enjoyable in the island. I am the less likely to forget it, as, almost before I had unfurled my net upon the railway to walk from Vizzavona to Tattone, I stumbled upon a perfect male *Papilio hospiton*, which I had been led to expect here from the previously noted abundance of fennel. This, with two battered females which I released, was, however, the sole example of this splendid butterfly captured, and though I saw, stalked and actually missed one other, all in the same region, I could neither hit upon another specimen, nor find the ova or larvæ on the foodplant. Walking down the line which appears to be used by the inhabitants as a highway as well, *S. neomyris* occurred fairly plentifully, but always singly. *Colias edusa*, the var. *helice*, and *C. hyale* were also abundant, while the woods between the river and the railway swarmed with *Dryas paphia*, but little else. Close to the hotel, however, on the elder flowers, a very beautiful form of *Cyaniris argiolus* was flying, the upper wings of the female almost wholly black, and the discoidal spot very distinctly marked. Here also I noticed *Pyrameis atalanta*, *P. cardui*, fresh and fine, and a single *Vanessa io*, a butterfly which I am given to understand is not usually included in the Corsican lists. *Lampides boeticus* on the broom, now radiant with a wealth of golden blossom, and near the station *Lampides telicanus* (which I personally did not take) were also in evidence. On this ground I collected two or three days. It was certainly the most productive locality, the females of *Argynnis elisa* turning up on July 21st, and *S. neomyris* by that date noted as abundant. On the 20th, I also netted a single *S. semele* var. *aristaeus*, evidently the first of its race at this altitude, and I should mention that, of the commoner things, *Leptidia sinapis*, *Epinephele tithonus*, *Pararge egeria* and *Coenonympha pamphilus* var. *lyllus* were generally abundant. On July 22nd, I shifted my headquarters for a couple of days to Corte, the central town of the island, as picturesque a spot as you might find, but with an evil pre-eminence in the way of smells, only to be escaped and forgotten in the beautiful hills and chestnut forests with which the converging valleys of the Tavignano and the Restonica are made beautiful. Close to the station and between it and the town bridge there is a curious sort of common waste; part of it used is a convenient rendezvous for cattle and market; the rest runs wild with those aromatic herbs which not only make the desert smile in Corsica, but convert it into a sweet-scented garden of pleasant colour and refreshing odours. The railway banks looked promising, but yielded next to nothing, though Mr. H. C. Lang, my companion on this and many another enjoyable expedition, was good enough to point me out *Epinephele ida*, which, otherwise, I should certainly have overlooked. But here, also, *Pararge* var. *tigelius* was worn and tattered, and the brambles and vineyards were mainly filled with *E.* var. *hispulla* and such smaller fry. On the aforesaid common, however, there was more distinctive variety. I bagged a fine female, *Dryas pandora*, almost at once off a thistle, missed at least a couple more, and boxed also *Syrichthus sao* var. *therapne*, reported a common insect, but only found for this once by me. Next day, on the way to the Tavignano Valley, I noticed many *D. pandora*, especially in the neighbourhood of the fort which commands the whole town on a bold acropolis of rock. Along the path, too, *Satyrus semele* var. *aristaeus* was common enough, while *Papilio machaon*, *Satyrus circe*, and *S. cordula* also turned up. The lovely fountain in the chestnut wood, which provided us with a welcome shelter from the heat of the day, as well as a bath, "splendidior vitro," also reintroduced us to the fine form of *C. argiolus*, but here our collecting, so far as Corsica was concerned, came to an end, and next day found me at Bastia in a perfect tornado of wind, which put all hopes of a last hunt on these coasts out of the question, and left me looking somewhat doubtfully toward Elba with mixed anticipations of the night to come in the Nice steamboat, the inconvenience of which, however, was due far more to the intense heat between decks than to any attentions on the part of Father Ocean—notoriously a rough customer to encounter off Cape Corso, where the last lights of the "Island of Unrest" at length receded from my view.

I have only been able to deal very briefly with that limited part of the entomological fauna which drew me to Corsica. At this point, however, I may conclude my account of this first part of my summer tour with a full list of the rhopalocera observed or captured, some 48 species in all—a not very imposing catalogue, but containing all of the Corsican-Sardinian specialities except *Euchloë tagis* var. *insularis*, which is, of course, an earlier insect, and *Epiniphele nurag*, which I have never heard of as an inhabitant of the French island.

PAPILIONIDÆ.—*Papilio hospiton*, *P. machaon*, *P. podalirius*.

PIERIDÆ.—*Aporia crataegi*, *Pieris brassicae*, *P. rapae*, *Pontia daplidice* (I do not remember, nor have I noted *P. napi*), *Leptidia sinapis*, *Colias hyale*, *C. edusa* and ab. *helice*, *Gonepteryx cleopatra*.

NYMPHALIDÆ.—*Pyrameis atalanta*, *P. cardui*, *Vanessa io*, *Aglais urticae* var. *ichnusa*, *Polygonia c-album*, *Issoria latonia*, *Argynnis elisa*, *Dryas paphia* and var. *immaculata* (*anargyra*), *D. pandora*, *Satyrus circe*, *S. alcyone*, *S. semele* var. *aristaeus*, *S. neomyris*, *Pararge megaera* var. *tigelius*, *P. maera*, *P. egeria*, *Epinephele jurtina* and var. *hispulla*, *E. tithonus*, *E. ida*, Coenonympha arcania, *C. corinna*, *C. pamphilus* and gen. æstiv. lyllus.

LYCÆNIDÆ.—*Thecla ilicis* var. *aesculi* (?), *Callophrys rubi*, *Chrysophanus dorilis*, *C. phlaeas* gen. æstiv. *eleus*, *Lampides boeticus*, *L. telicanus*, *Plebeius argus* (?) and var. *corsica*, *Polyommatus baton*, *P. astrarche* gen. æstiv. *calida* (*aestiva*), *P. icarus*, *P. hylas*, *Cupido minimus* (?), *Cyaniris argiolus*.

HESPERIIDÆ.—*Hesperia sao* var. *therapne* and *H. alveus*.

Revision of the European Alucitides.

By J. W. TUTT, F.E.S.

It is now some fourteen years since the MSS. of the *Pterophorina of Britain* was written, and when this was done it was rather with the idea of its being useful to the field lepidopterist than to the more scientific zoologist. Many of the points there dealt with have since been worked out in fuller detail; a greater number of collectors of the group has added largely to our knowledge of the distribution of the species; Dr. Chapman has shown that the group structurally has no close connection with the Pyrales with which it has been linked; but of real scientific details, relating to the individual species, we are almost as much in the dark as we were when the book was written.

With the help of a number of our more scientific micro-lepidopterists and general zoologists—Messrs. A. W. Bacot, E. R. Bankes, B. A. Bower, J. H. Durrant, L. B. Prout, Dr. T. A. Chapman, Lord Walsingham, and many others—I propose to revise the whole group *de novo* during the next twelve months. For this purpose a large quantity of material in all the early stages is wanted. A glance at Meyrick's *Handbook*, pp. 430-442, would suggest that none of our British plumes laid eggs, and that few had pupæ, whilst even Fernald's excellent work (*The Pterophoridae of North America*) does not touch these stages, and our own *Pterophorina of Britain* is almost as illuminating on the ova of the species, so that here is our first start. We want descriptions of almost all the ova of our British plumes, or ova (newly-laid, if possible), for description. We say newly-laid because they soon change colour. Those we have been able to describe during the past few years are those of *Agdistis bennetii*, *Eucnemidophorus rhododactylus*, *Platyptilia gonodactyla*, *Oxyptilus teucrii*, *Marasmarcha phaeodactyla*, *Oidematophorus lithodactyla*, *Leioptilus lienigianus*, *Aciptilia galactodactyla*, *A. tetradactyla*, *A. baliodactyla*, *Mimaeseoptilus plagiodactylus*, and *Amblyptilia acanthodactyla*. Most of these descriptions have been made under difficult circumstances, generally abroad, and without proper apparatus, and none are so good that they could not be well duplicated; but those eggs of which no description is extant we would beg from our micro-lepidopterists whenever they may get them. A living ♀ usually lays freely; a ♀ *Amblyptilia acanthodactyla*, that partially recovered from the effects of the ammonia on the setting-board, laid a small batch of eggs; *Aciptilia baliodactyla* under similar conditions did likewise; a ♀ *M. phaeodactyla* often lays freely when confined in a pill-box, and so do others. But although these are some of the methods of getting eggs, the lepidopterist who will get an egg laid *in situ* on the foodplant (either in nature or confinement) will be able to add some detail to our knowledge on its "egglaying," which is wanted in almost every species we have.

It is well known that the peculiarities in the arrangement of the tubercles of the newly-hatched larvæ of lepidoptera afford, in some instances, some of the very best clues to their ontogenetic relationship. I believe I am right in saying that there is no description extant of a newly-hatched plume larva, and possibly no material for making one, although "spiritualised" or "mounted" specimens would do as well (or better) than living ones. There are two modes of describing larvæ :—(1) To describe them structurally in order to be able to form an idea of their relationship with other larvæ. (2) To describe them superficially so as to know them when you see them. No one yet has published a description, on the former lines, of a plume larva. Of those described for the purpose of knowing the larva, those of Mr. Porritt, Mr. Buckler, and Mr. South are well-done and exceedingly useful; but they are nearly all descriptions of the adult larvæ, and hence have rarely any hints as to the differences that occur in the successive larval stadia, even in colour and markings. It is to get some knowledge of these changes that we ask our lepidopterists to get us now, or in the early spring, young larvæ if possible, but if this be not possible to get us adult larvæ later. We have this week received from Mr. Ovenden young larvæ of *Leioptilus lienigianus*, *Agdistis bennetii*, and *Aciptilia galactodactyla*, and these are the only species of young larvæ which we have yet obtained. We have already descriptions (or material mounted) of adult larvæ of *A. bennetii*, *E. rhododactyla*, *P. gonodactyla*, *M. phaeodactyla*, *O. lithodactyla*, *L. lienigianus*, *A. galactodactyla*, and *A. pentadactyla*, but young larvæ of these and many others are now feeding, and we would ask our field-workers, who know where these species live, to try to get us a specimen of each, if only a single one, and tell us where they feed during the autumn months.

Of pupæ we also want many, and we further want to know where pupation takes place in a state of nature. No descriptions of pupæ extant give us details that can be used for classificatory purposes, and, more important, none give us the slightest clue as to the relationship between the setæ and warts found on the pupa and those found on the larva, nor comparative lengths of the appendages and wings, nor modification of the headpiece and cremastral attachments. We have pupal material of a sort of *A. bennetii*, *E. rhododactyla*, *P. bertrami* (the yarrow species), *P. isodactyla*, *P. gonodactyla*, *A. acanthodactyla*, *M. phaeodactyla*, *M. pterodactyla* (*fuscus*), *O. lithodactyla*, *P. monodactyla*, *L. lienigianus*, *L. tephradactyla*, *A. spilodactyla*, *A. galactodactyla*, and *A. pentadactyla*. Not that our pupæ would not do well enough with additional examples for comparison, still here again we would urge that the species not mentioned are those most wanted. We have also pupal cases of *O. distans* from Mr. Norgate and a little doubtful material of other species, but living pupæ of *O. distans* have not yet been in our possession.

At the present moment *A. acanthodactyla*, *A. punctidactyla* and *P. monodactyla* are in the imaginal stage, and we should like ♀s for eggs if any are available, and no doubt the golden-rod workers will get larvæ of *L. osteodactyla* from the flower- and seed-heads, rather than *L. tephradactyla*, from the leaves. I do not wish to spare myself in the fact that during the past twenty years I have had every possible chance of accumulating material of many species, *e.g.*, *A. spilodactyla*, *L. microdactyla*, *L. osteodactyla*, *L. tephradactyla*, *P. monodactyla*, *M. bipunctidactyla*, *O. teucrii*, etc., which we are now absolutely without, but that, like most other unscientific workers, I thought that I could get the material again at any time or that I should never want it. Still, there is no country in the world that has so many good field-lepidopterists, and nowhere is more generosity shown in getting and giving material for scientific work, and I have no doubt that in twelve months' time, with average luck, most of the material wanted will have been made available. Living (or preserved) material—eggs, larvæ, and pupæ—should be sent direct to Dr. Chapman (Betula, Reigate) or Mr. Bacot (154, Lower Clapton Road, N.E.), who, one can safely say, will make as much out of it as anyone engaged in our study possibly can, and not direct to me, as at best I am only a muddler at these little larvæ.

The species of which one feels the earlier stages ought to be better known are as follows :—*Trichoptilus paludum* (known in the imaginal stage to the Rev. O. P. Cambridge for years), *Platyptilia tesseradactyla* (known alive as British only to Mr. Kane and the Irish lepidopterists), *Oxyptilus distans* (known to Mr. Norgate and Lord Walsingham), *O. pilosellae* (known to Mr. Sydney Webb), *Aciptilia tetradactyla* (partly worked out by Mr. Porritt and Mr. Bankes). *A. tetradactyla* and *A. baliodactyla* are on the Kentish chalk-hills, two of the very commonest species, yet I believe I am right in saying that Messrs. Bower, Fenn, and myself, who have worked ground where they occur freely for many years, have never come across the larvæ or pupæ. Still more abundant in Kent, perhaps, is *Oxyptilus parvidactyla*, yet we are not sure that any British lepidopterist has ever seen its egg, larva or pupa. We ourselves are anxious that our northern lepidopterists—Mr. Horne, Mr. Dalglish, Mr. Routledge (and his Carlisle friends), etc.—should get us larvæ of the *Platyptilia*, allied to *bertrami*, which is said to feed in ragwort (*Senecio*), and which is possibly distinct, whilst, in the same group, only one of those lepidopterists who get larvæ of *P. isodactyla* can compare it with those of *P. bertrami* on the one hand, and *A. acanthodactyla* on the other, to see whether these species really are, as some first-class entomologists aver, to be placed in the same genus. Mr. Austen, of Folkestone, used to breed *P. zetterstedtii*, *L. osteodactyla*, *L. tephradactyla* and *L. microdactyla* freely, and we have hopes that Mr. Purdey or some other of our south-eastern collectors may help us here. It is very doubtful from the larval habits whether *L. lienigianus* and *L. microdactyla* have any generic connection with *L. osteodactyla* and *L. tephradactyla*, and comparison of the early stages has to be made. Similarly, the connection between *A. pentadactyla* and *A. tetradactyla* appears to be rather far-fetched. A comparison of the larvæ of *M. fuscus* (on *Veronica*) with those of *M. bipunctidactyla* (on *Scabiosa*) and *M. zophodactyla* (on *Erythraea*) is also much wanted. It is clear that work of this kind is only to be successfully accomplished by an accumulation of energy, on the species desired, by many lepidopterists. We are sure of the help of our best micro-lepidopterists, but is it too much, we wonder, to ask those collectors who go for the same local species of macro-lepidoptera every year to direct their attention to the plumes for a season, and to give the usually collected species a rest ? Even if only fresh localities for the species are added, we shall be very thankful, and the facts will be duly published. At any rate, help is urgently needed.

At the same time, we would urge our continental-dwelling friends to help us. Perhaps Mr. Lambillion, Mr. Dupont, Mr. Bourgeois, Mr. Sloper, Mr. Wheeler, Mr. Dadd, Dr. Rebel, and others, will enlist the aid of those continental micro-lepidopterists with whom they are respectively in touch, and who are likely to be able to obtain "plume" larvæ. From these one might get larvæ of *Pselnophorus brachydactylus* and *Oxyptilus hieracii*, two species that, although on our British list, no British lepidopterist really knows anything about, and, of course, many others. Mr. Barrett says that there are some true British *O. hieracii* in the Allis collection at York. We wonder if Mr. Porritt, by actual comparison with a good series of *O. pilosellae*, *O. distans*, and *O. teucrii*, could confirm or contradict this statement.

Orthoptera in the Isle of Wight.

By MALCOLM BURR, B.A., F.L.S.

While spending the later summer months at Freshwater this year, without actually trying to work out seriously the Orthopterous fauna of the Isle of Wight, I picked up a good number of species, some of considerable interest, in several localities. The weather, of course, was not very favourable, though we had a few really bright sunny days, but, as a general rule, a strong breeze blew from the west for weeks at a time, although, it is true, we were extremely lucky in having far less rainfall than even on the neighbouring parts of the mainland. Through August, Mr. Donisthorpe was staying also in Freshwater, and we were able to spend some very pleasant days collecting.

At nearly every place I visited along the coast, I diligently turned over stones and seaweed above high-water mark, in the hope of coming across *Labidura riparia*, Pall., but, in the island, my efforts were not crowned with success. I did not have occasion to visit Bonchurch, whence this species has been recorded, nor did I find it on the beach by Niton, on the Undercliff not very far from Bonchurch. On two occasions I made excursions to Boscombe, where it has been recently rediscovered, as I was very anxious to see this species alive; on my first visit, on the afternoon of August 22nd, after spending the morning at Beaulieu Road, I spent nearly two hours hunting on the coast near Boscombe and Bournemouth, but all I found were two very small larvæ, which I put in a tube to bring home alive, but before very long, the larger one had devoured the smaller. Better luck attended my second visit, on September 1st, when Major Robertson, whose daughter had found the insect and run it down to its haunts, kindly invited me over and showed me where it had actually been taken before; we hunted diligently for some time in a broiling sun, and took two males and a female, all of which were captured by the Misses Robertson, while I actually failed to find one myself. Mr. W. J. Lucas, who had visited there a few weeks previously, had found them more numerous.

Forficula auricularia, Linn., was, of course, common everywhere, but I did not come across the variety *forcipata*, Steph. I found a curious aberration at Compton Bay in horsedung; I was struck at once by the absence of the wings, and thought at first I had turned up a new British species, and eagerly looked for more; there were plenty of the typical form of both sexes in the patch of dung, but I found only one other apterous specimen, and these were both females; I believe this abortion of the wings is extremely rare in this species, and cannot recall any mention of it occurring before. In appearance, these two females resemble very closely a species described from the mountains of Southern Italy, *F. targionii*, Brunner, in which the wings are wanting, and the elytra are rounded posteriorly; in these two females, as in the normal *F. auricularia*, the elytra are emarginate behind. *F. targionii* is only distinguished from *F. auricularia* by the absence of the wings and rounded hinder margin of the elytra.

Mr. Donisthorpe took another curious *F. auricularia* at Ryde on August 25th ; it is a normal male, but with the right branch of the forceps simple, of the same shape as the forceps of the female; this is a phenomenon not very rare in earwigs and is often called gynandromorphism, but, in all the cases that I have examined, the abdomen consists of nine visible segments, which is the normal number of the male, only seven being visible in the female; I am of opinion that this is not true gynandromorphism, but merely poor development of one branch, due to an accident or to insufficient nourishment; in all earwigs the forceps vary considerably in shape, and are often deformed or distorted by various circumstances.

Forficula lesnei, Finot, we found in two localities ; the first was the Undercliff near Blackgang, where Mr. Donisthorpe took a very dark female by sweeping; I swept hard for nearly two hours, but only found two more females; at the end of the day, when returning to our bicycles after bathing, I took a male by a casual sweep of my net among thistles, just as we were leaving the locality; in the chine at Blackgang, immature specimens abounded in the thick herbage by the brook, but I was unable to tell whether they were *F. auricularia* or *F. lesnei*. The second locality was a bed of nettles by a hedge at Freshwater Bay, where Mr. Donisthorpe found them commonly, and we took a good number of individuals in the nettles only, the whole length of one hedge.

Ectobia panzeri, Stephens, I found common enough all along the coast; we took it sweeping at Alum Bay, Yarmouth, Compton Bay, Blackgang, on the Undercliff at St. Catharine's Point, and also at Boscombe, where Major Robertson took a very dark specimen of the form *nigripes*, which is the northern race. This little cockroach varies considerably in colour, from nearly black, (*nigripes*, Steph.), which is by no means uncommon in England, to yellowish, almost testaceous, as in Spain.

E. lapponica, Linn., occurs in Parkhurst Forest, where Mr. Donisthorpe swept one on August 7th. Very immature larvæ of one species were abundant among the dead leaves and twigs in the Forest, but these, from their pale colour, I think were immature *E. livida*, the rare species, but we were unable to find an adult specimen.

Among the true grasshoppers, I found *Mecostethus grossus*, Linn., numerous, as usual, in Denny and Matley Bogs in the New Forest; on August 20th, I went over to Brockenhurst, for a day in the bogs with Mr. W. J. Lucas, but the weather was so abominable that we were quickly driven home; still, I took three or four *M. grossus*, and returned two days later in fine weather, to find it numerous; it is quite the handsomest of our indigenous Acridiodea, and like many continental species it takes readily to flight. The fact that so conspicuous an insect was overlooked for so many years, though numerous in the bogs where it does occur, encourages one to hope that one day its relative and rival in beauty, *Parapleurus alliaceus*, Germar, may be taken in this country; it occurs on the continent in similar localities to *M. grossus*, and has a similar distribution, but is rarer and more local; it occurs at Fontainebleau, where *M. grossus* is common; it resembles that species in size and structure, but is of a pale blue or bright green colour, with a black band running from the eyes across the lateral ridges of the pronotum backwards over the elytra.

Stenobothrus lineatus, Panzer, I looked for in vain; *S. viridulus*, Linn., I only found in the New Forest and in Parkhurst Forest; I was surprised not to come across it on the Downs round Freshwater, as generally it is common enough on grassy uplands throughout the country. I did not succeed in discovering *S. rufipes;* this handsome species I have always found far less common than is generally supposed, in fact, in Great Britain it should rank as quite locally distributed, and all captures should be carefully recorded. *S. bicolor*, Charp., of course, was abundant everywhere, with all its colour varieties. *S. parallelus*, Zett., too, was numerous nearly everywhere, but I never found *S. longicornis*, Charp., which I had hoped to discover in the New Forest, as I have taken it in similar places, together with *M. grossus*, in France; it is a very local species, occurring in a few marshy places in North Central France, and there is no reason whatever why we should not find it in England. *S. elegans*, Charp., I found in several places; the first one I took was in the rank grass on the shingle by the bathing machines at Freshwater Bay, where it is fairly numerous; I found it later, though less numerous, in the marshy fields at the Freshwater end of the swamp that runs to Yarmouth; in Parkhurst Forest it was common enough in the open clearings by the rifle range, and I took it sparingly in a grassy field below Matley Bog in the New Forest.

Gomphocerus maculatus, Thunb., is common on the Downs round Freshwater; I took it also in the ridings in Parkhurst Forest, and at Blackgang Chine, also at Denny Bog and at St. Catharine's Hill at the back of Christchurch, where I had gone to hunt in vain for *Decticus verrucivorus*, L.

Tettix bipunctatus, L., we took in Parkhurst Forest, and at Compton Bay; also on the Undercliff, but it did not appear to be numerous anywhere; *T. subulatus*, L., I did not succeed in finding; like *S. rufipes*, this has the reputation of being a fairly common species, but is less so than is generally supposed.

Leptophyes punctatissima, Bosc., is common nearly everywhere; I have taken it in plenty by sweeping in the village of Freshwater and at Freshwater Bay, Compton, Blackgang Chine Undercliff, Parkhurst Forest, and also at Denny.

I was very pleased to find a new locality for the very local *Xiphidium dorsale*, Latr. The first specimen was a single female, taken on the saltmarsh at Yarmouth; both Mr. Donisthorpe and myself had carefully swept a certain corner of the marsh for the whole of one afternoon and one morning, and only at the last sweep I found a solitary female of *Xiphidium dorsale* in my net, after I had abandoned hope of finding it there: some days later Mr. Donisthorpe took several in a small area near at hand, which we had both worked carefully on several occasions, for a certain beetle, and yet it was only after several days' search that *X. dorsale* turned up; this shows, I think, that the specimens *must* have moved there since we had first begun to search, as the grasses and marsh-plants are short and clear, and we could hardly have failed to find it, had it been there, and even if it had been hiding in the roots, it would have been revealed by the systematic grubbing for beetles. On August 18th, we found it in numbers in the reeds, and among sea-lavender, which grows round the edges of the sluggish Yar near Freshwater station; at that date, about half the specimens were immature; it is a very beautiful insect when alive, but the brilliant emerald green colour fades and disappears on drying, and often the dead specimens turn dirty brown, even the clear bright posterior femora usually fail to keep their colour; I found that they keep their colours pretty well in formaline, though there is a strong tendency to turn reddish, which is perhaps because the formaline may have been used too strong.

Locusta viridissima swarms in the island; at Freshwater it is numerous in all the hedges and at night its chirping resounds all round, mingling with the stridulation of *Thamnotrizon cinereus*, and this incessant rattle of the grasshoppers on a fine night sounds more like a South European country than an English watering-place. *L. viridissima* is common along the cliffs at Compton Bay, and further inland, beyond Compton Farm, also at Blackgang and on the Undercliff; we heard its stridulation very loud in Parkhurst Forest.

Thamnotrizon cinereus, Linn., is as common as the last named species; I cannot understand why it is regarded as being rather rare or local; I have always taken it, and heard its unmistakable chirp nearly everywhere that I have looked for it. At Freshwater, there is not a hedge nor a thicket where one or two cannot be found, and I took it at Compton Farm, at Blackgang, in swarms on the Undercliff in thick beds of flowers, and common enough at Parkhurst Forest. At Freshwater it sometimes even comes into the houses, and I have had specimens of "an extraordinary insect" brought to me, which turned out to be only *Thamnotrizon cinereus*, and it is not only on the south coast that I have found it so common, but also in Bagley Wood round Oxford, at Goring, Dormans Park, and Edenbridge in Kent. I have often heard its chirp in the hedges when walking or driving at night along country roads.

Platycleis grisea, Fabr., is extremely common on the cliffs at Compton Bay; it usually seems to be most numerous on chalk cliffs, as at Folkestone, especially where there is *Ononis arvensis*, but at Compton Bay it is equally numerous on the outcrop of the Greensands; it swarmed, too, on the Undercliff and was common at Blackgang. *P. brachyptera* is common in the long grass and bog-myrtle at Denny and Matley Bogs, in the New Forest, and I found it in numbers at St. Catharine's Hill at the back of Christchurch.

The only cricket that I found was *Nemobius sylvestris*, Fabr., which is common in the woods in the New Forest; on August 20th, it was only to be found sparingly, though the young larvæ swarmed; in finer weather, two days later, I took more of it, but the very young larvæ far outnumbered the imagines.

Habits of the Imagines of Anthrocera purpuralis (minos).

By J. W. TUTT, F.E.S.

I have already published (*Brit. Lepidoptera*, i., pp. 440-442) what were to me interesting notes on the habits of *Anthrocera* purpuralis, and the fact that I have *quite* recently seen the species again in considerable numbers, leads me to make an addition to those already published. In the early afternoon of July 30th, whilst walking from Haudères to Arolla, I found the species in some numbers, freshly emerged, on the slopes at the village of Satarme. They were then clinging to almost every bloom of the alpine *Centaurea* that grows here, the males in overwhelming excess, the few females being in almost every instance paired, sometimes four or five males being present on the same flower on which a paired couple were already resting. From here the species occurred in small numbers, mostly ♂ s, in all the flower-clad openings in the pinewoods in the upper road to the Kurhaus, whilst they appeared occasionally on the slopes above the Kurhaus, *i.e.*, at an elevation of above 7000ft. (where *A. exulans*, also, was abundant) about a week later. On the journey down from Arolla to Evolène on the afternoon of August 12th, at about 3.30 p.m., I found the species again in great numbers at Satarme, resting, as before, on the *Centaurea* blossoms, not by any means quiescent though, although there was no sun, but busily and greedily sucking the nectar from the flowers of the capitula on which they were resting. The ♂ s seemed now to be scarcely more numerous than the ♀ s, and the condition of both sexes, in most cases, left much to be desired. The interesting point, however, to me, was that every ♀ , whether in good, bad, or indifferent condition, was paired, and, in some instances, the ♀ s were exceedingly worn, and contained scarcely any eggs. I have no doubt that here, at any rate, the habit of this species was to pair in the afternoon, and, as I found no ♀ uncoupled, possibly to pair every afternoon. It is quite clear from the poor condition of the specimens that most of the examples of both sexes observed this afternoon had paired previously. At Chamonix, on August 15th, rain fell all day, but the morning of the 16th broke almost cloudless, cold, however, and the snow was lying on all the mountains down to 5000ft. A start was made about 9 a.m. to walk up the Brévent (see *anteà*, xiv., p. 325), but the herbage was wet, the temperature low, and scarcely an insect was on the move; by 10.30 a.m. clouds had begun to gather, and by 11 a.m. most of the aiguilles were covered. By 10.30 a.m. I was about half-way up to Plan Praz, and here I came across *A. purpuralis* again, in very good condition, clinging in numbers to the scabious flowers, busily feeding, in most cases singly; only two pairs were noticed *in cop.*, and, in both instances, the ♀ s were quite fresh, and loth to fly, as might be expected both from the cloudy state of the weather and the low temperature. After noon it became duller and colder, and the weather precluded all attempts to entomologise. On the way down, about 3 p.m., there were still many *A. purpuralis* on the flowers, but now seated underneath the capitula for shelter, like the bees, and perfectly motionless. It appeared to me remarkable that, on a day when scarcely anything lepidopterous appeared, when single examples of *Erebia goante*, *E. stygne*, *Aglais urticae*, *Argynnis adippe*, *A. aglaia*, *Melitaea athalia*, and two or three each of *Erebia tyndarus* and *E. melampus* made up the total catch on a slope that I knew swarmed with insect life, this species should be alert and active, and braving the inclemency of a winter temperature at only about 200ft. or 300ft. below where snow was lying thickly from the fall of the preceding evening. I may add that the species occurs frequently on the slopes just below the Chapeau on the eastern edge of the Mer-de-Glace.

Confined in a glass-topped box, the ♀s do not lay at all freely. Of one pair I had, however, the ♀ laid just over 90 eggs, mostly in two batches of 40 and 35, the remainder being laid in small batches of about half-a-dozen. When laid in a single layer the eggs appear to be tilted at an angle of about 30°, each successive row being laid upon the preceding one, and at the same angle, so as to cover its lower half, the micropyle being upwards; but, in most cases, a second layer is placed on the lower, when the larva, escaping from the lower series, must eat its way through the eggshells above them or die without escaping. The eggs are of a clear yellow colour, uniformly coloured, and without any of the transparent areas described on the eggs of some of the allied species (*Brit. Lep.*, i., pp. 416, 472, 500, 520). The egg is fairly regularly oval in outline, but somewhat flattened at the micropylar end which appears rather wider than its nadir. The upper surface is somewhat depressed towards the micropylar end, but for an Anthrocerid egg it is fairly plump and its outline fairly regular. It may be worth noting that, owing to the confinement, the surface of the eggs are richly covered with scales, a fact that suggests also that, freshly laid, the eggs are somewhat sticky.

Criocephalus polonicus, Motsch.—a genus and species of Longicorn Coleoptera new to Britain.

By H. WILLOUGHBY ELLIS, F.E.S.

During last year Mr. F. Gilbert Smith took some larvæ of a longicorn beetle in the New Forest in Scotch fir, and, after seeing them, I decided to accompany him this year to that district to thoroughly investigate the subject, and we succeeded in finding the insect in numbers. They were all taken in the larval stage, the colony being a very strong one. Soon after arrival home they pupated and eventually emerged, and proved to be *Criocephalus polonicus*, Motsch., a large longicorn beetle new to Britain. The conditions under which they were living left no doubt that they had been breeding there for many years, and it is most probable that they are to be found in other parts of the forest if worked for in places offering the right conditions.

The genus has been mentioned as occurring in Britain by the capture of *C. rusticus* in South Wales, and the specimen has been preserved in the British Museum collection, but there appears to be no doubt that it was imported from the Continent of Europe in timber, which is so largely used in coal mining in the neighbourhood. Stephens, in his *Manual*, also refers to the same species as having been met with in Britain, but remarks that it is not indigenous. Under these circumstances the genus, as well as the species, may be considered new to Britain.

The distribution of *C. polonicus* (according to the localities attached to the representatives of this species in the general collection of coleoptera in the British Museum) cover the following countries: Greece, Dalmatia, S. France, and Madeira, and other records give Denmark, Syria, and Poland, the latter locality being responsible for Motschoulsky's specific name.

Wollaston recorded *C. rusticus* from Madeira, but the specimen to which the record refers, and which is in his Madeiran collection at *South Kensington, is C. polonicus.*

Schiödte, in his long descriptions, marks the chief difference between the larvæ of *Criocephalus* and *Asemum* as follows :—

1. Prothoracic ring about twice as broad as the eighth segment of abdomen—*Criocephalus*.

2. Prothoracic ring about one-third broader than the eighth segment of abdomen—*Asemum*.

The first mention of *C. polonicus* is made by Mulsant (*Coléoptères de France, Longicornes*, 1st edition, p. 64), when he includes it as *C. rusticus*, L., var. *ferus*, in the year 1839. The first description in which it is given specific rank is as follows :—

Criocephalum polonicum.—Il est plus grand et surtout plus convexe que le *C. rusticum* de couleur presque noire et avec les lignes élevées sur les élytres très peu marquées. Le corselet est bombé. Je l'ai pris en Pologne (Motschoulsky, *Bulletin de la Soc. Impériale des Naturalistes de Moscou*, 1845, i., p. 88).

The same author again describes it 15 years later as follows :—

Criocephalum polonicum, Motsch., "Bull. de Mosc.," 1845, 88, 258.—Nigropiceum opacum, subconvexum, postice attenuatum : thorace subelongato, convexo, postice distincte attenuatis, nervis obsoletis. Long. 7-11l., lat. 2-3l. "Coléoptères rapportés de la Songarie par M. Seménof et décrits par M. de Motschoulski" (Lu le 11 Novembre, 1859, *Bulletin de L'Académie Imp. des Sciences de Saint Pétersbourg*, 1860, i., p. 311).

The following further remarks are made in the above paper :—"Voisin de notre *C. rusticus* mais ordinairement de couleur plus noirâtre, de taille plus grande, avec le corselet plus allongé et les élytres proportionellement plus courtes. Il est rare en Pologne et plus commun dans les steppes des Kirguises."

Kraatz next describes it as *C. ferus* in 1863. His description reads :—

C. ferus.—Nigro-brunneus, thorace subrotundato, elytris confertissime punctatis, punctis majoribus nullis, antennis pedibusque gracilioribus, his femoribus minus validis quam in specie sequente. Mas : Abdomine confertissime subtilissimeque punctato, sericeomicante. Fem. : Abdomine confertissime vix perspicue punctato, fere opaco. *Criocephalus ferus*, Dej., "Catal. Solier," *in litt.* *Criocephalus rusticus*, Muls., var. *D.* (? var. *A.*), Longicornes, p. 64. Habitat in Gallia meridionali, Andalusia, insula Corsica (*Berliner Entomologische Zeitschrift*, 1863, p. 107).

Schiödte then described it in 1864, from a specimen taken in Denmark, as *C. epibata*. It is remarkable that none of these authors pointed out the chief characteristics of *C. rusticus* and *C. polonicus*, which lie in the clavation of the 3rd joint of the tarsi, until Bedel (*Faune du Bassin de la Seine*, 1889) quoted them :—

1. Yeux larges à peine échancrés, à facettes grossières—*Criocephalus*.
2. Yeux étroits, nettement échancrés, à facettes fines—*Asemum*.
   - (*a*) 3^e^ art. des tarses postérieurs divisé en deux lobes dès sa base. Yeux ordinairement hérissés de quelques poils—*C. rusticus*.
   - (*b*) 3^e^ art. des tarses postérieurs bilobé à partir du milieu. Yeux glabres. Coloration souvent noirâtre—*C. ferus*.

The synonymy of *C. polonicus* is therefore :—

Criocephalus rusticus var. *ferus*, Muls., "Col. de France, Longicornia," 1st edit., p. 64 (1839). *Criocephalum polonicum*, Motsch., "Bull. Soc. Imp. Mosc.," 1st edit., p. 88 (1845). *Criocephalus ferus*, Kraatz, "Berlin. Ent. Zeitsch.," p. 107 (1863). *Criocephalus epibata*, Schiödte, "Natur. Tidskr.," ser. 3, vol. ii., p. 41 (1864).

I do not know how the law of priority applies to Mulsant's var. *ferus* (1839), but I am of opinion that the original description which raised the insect to specific rank should stand, and I have, therefore, retained Motschoulsky's name.

With reference to Dr. Sharp's record of the capture of *Tetropium fuscum* in the New Forest (*Ent. Mo. Mag.*, xxxix., 198) on June 26th last, it may be mentioned here that we took several larvæ on May 29th in company with those of *C. polonicus*, which agree with the description of the larva of *T. fuscum*. At the time of capture I considered the larvæ small specimens of *C. polonicus*, and they were given little attention, with the result that on arrival home they were almost dead. I have looked after them very carefully since, and some of them seem to be getting over the rough treatment they received, and I hope to rear, at any rate, some of them.

Habits of the imagines of Nemeophila plantaginis.

By J. W. TUTT, F.E.S.

One of the best known of our alpine moths is *Nemeophila plantaginis*. On some of the high flower-covered alps it occurs in boundless profusion and in marvellous variety. The variation from the blackest to the whitest examples is most extreme, and some years ago I dealt with this phase of the subject (*anteà*, vol. ix., pp. 187 *et seq.*) Above Arolla, at an elevation of from 7000ft. to 7500ft., I found the species between August 1st and 13th, 1903, in the greatest profusion on the alps above the higher châlets towards the Pas du Chèvres, which at this time were huge beds of blue, and yellow, and white, due to the magnificent masses of bloom of forget-me-nots, gentians, hieracii, saxifrages, etc., with which the upland alps were covered. In working up to these slopes during the morning an occasional ♂ was disturbed, which generally flew up wildly, whilst more frequently a ♀ was found on the move, apparently without being disturbed, and was usually easily boxed for eggs. The result of several ♀s thus promiscuously taken has been a very fair supply of eggs, which ought to produce a good number of aberrations another year. About 2 p.m. the ♂s began to move freely on their own account, but it was not until 3 p.m. that they were fairly on the wing, zigzagging up and down the steep slopes with amazing rapidity, hesitating here and there, finding their way down into the herbage, where a ♀ appeared to be hidden, although one was rarely discovered by my searching. On one occasion 13 ♂s came to a certain spot in a few minutes, most of which were captured, and it seemed certain that a ♀ must be hidden there. Careful search at last revealed the dried body of a dead ♀ that had been largely eaten by ants hidden low down in the grass. I quite fail to see how the ♂s could have been attracted to her either by sight or scent. The greater number of specimens were taken as they flew rapidly up and down the slopes, but I missed three or four for each one that I took. The white aberrations were particularly difficult to net, especially if the sun were at all in one's eyes, and it was concluded that the very dark ♂s—by far the rarest form—flew more slowly and heavily than the yellow or white examples, and this seemed to be really the case, and not due to the colour being more readily followed. Whilst the sun shone the males continued on the wing until quite late in the evening, but when the sun was hidden by clouds they usually became quiescent, and scarcely a specimen could be seen. Pairing appeared to take place about 4 p.m.; at least one ♀ that had evidently just paired was taken at that time, five other ♂s being captured as they flew up to her *after she was paired*. No doubt a fair number might have been thus captured had the ♀ and her partner not been duly pill-boxed. It is impossible to guess at the abundance of this species on these slopes. There must have been literally millions, and specimens were taken on the 18th, going down the valley, until halfway between Evolène and Useigne, below which no examples were seen. The attempt to capture the swift-flying males on steep, slippery slopes, is not at all bad sport, and where the ground is at all bad, rather difficult and dangerous as well. I had one or two nasty falls whilst thus engaged, but this did not prevent me from keeping to the work until a very fair series had been collected.

ORTHOPTERA.

Labidura riparia, Pall., using its forceps.—I was keeping alive for a short time, provisionally in a small bottle, a fine male *Labidura riparia*, that I had taken near Boscombe. I fed him from time to time with flies, which he devoured greedily. One day I put a large blue-bottle in with him. As I dropped it into the bottle, the earwig at once raised his forceps vertically above his back with great swiftness, and seized the blue-bottle as it fell. He gripped it firmly with his forceps, one branch of which entirely penetrated the fly; then he carried it round the bottle for a short time, probably on account of the light. I was very interested to see this use of the forceps, which form a dangerous weapon against such small creatures as other insects; the tips are very sharp. Although the fly fell in upon the earwig from behind, it was seized instantaneously, with good aim, as though he could see it coming distinctly. I noticed that the *Labidura* generally ate the soft parts of the flies which I gave it, and left the outer shell, with the feet and antennæ, etc.—Malcolm Burr, B.A., 12, Fitzjames Avenue, West Kensington. *September* 11*th*, 1903.

COLEOPTERA.

Coleoptera in Cumberland in June.—On June 16th last, I went up to stay with my friend Mr. G. B. Routledge, in Cumberland, and with the intention of doing some collecting there. I was fortunate with the weather, as, though I had left London in floods, it only rained one day during the whole of my stay. I was met by Mr. Routledge and Mr. F. H. Day, at Carlisle, and, after future plans had been discussed, I continued my journey with the former to Heads Nook, where he lives. The next day our first expedition was made to the Gelt Woods, a most lovely spot, on the banks of the Gelt river. Our principal object was to capture *Ancistronyncha abdominalis*, which beautiful insect, the finest of all our *Telephoridae*, soon put in an appearance, and a nice series was secured. It was noticed that the ♂s were much scarcer than the ♀s. Sweeping *Geranium* produced *Coeliodes geranii* in plenty, whilst by general sweeping the following species occurred, *Podabrus alpinus*, *Telephorus pellucidus*, *T. nigricans*, *T. haemorrhoidalis*, *T. limbatus*, *Rhagonycha pallida*, *Apion ervi*, *Anaspis rufilabris*, *A. frontalis*, *Hypera polygoni*, etc. Searching the moss from a small waterfall resulted in the capture of *Stenus guynemeri*, *Quedius auricomus* and *Q. umbrinus*. In the shingle of the river *Bembidium monticola* and *Nebria gyllenhali* were found, of the latter, which is usually found in higher situations, a red form, which is quite mature, occurs here. Rain having set in, further operations were suspended, and we adjourned home.

The next day was spent collecting on Mr. Routledge's property, he possessing a very extensive moss, known as Hayton Moss, which is close to his house. There the local little *Telephorus figuratus* was swept in plenty, with others of the commoner species. *Hydroporus nigrita* was fished out of a peat-hole. *Bolitochara lucida* was found in fungus on an old stump, and *Anisotoma calcarata* and *Colenis dentipes* by evening sweeping. On the 19th a visit was paid to the river Irthing, and a search for the very rare little *Bembidium schüppeli* along its banks was quite successful, a nice series being taken. *Bembidium monticola* again turned up. *Hydroporus rivalis* was fished out of the river, as was also *Brychius elevatus*. In a small wood near, *Ancistronycha abdominalis* occurred sparingly. *Grypidius equiseti* was swept off *Equisetum*, and *Phyllobius viridicollis* off nettles. *Staphylinus pubescens* occurred under stercore. *Prasocuris beccabungae*, *Malthodes dispar*, and other commoner things were swept.

On the 20th, we went to the Burgh marshes, and were joined by Mr. Day. The first capture was *Telephorus darwinianus*, a nice series of which was swept from the grass growing on the edges of a dyke, the red form, however, being rare. *Bembidium lunatum* was plentiful on the mud on the sides of the dyke. Several specimens of the two rare species of *Dyschirius*, *D. nitidus* and *D. politus*, were taken on the banks of a muddy creek, *Clivina collaris* and *Dyschirius salinus* also occurring with them.

On June 21st, Messrs. Day and Britten came out to us, and Mr. Routledge drove us all to the foot of Cumrew Fell, where the day was proposed to be spent. The chief object of our search was *Lathrobium punctatum* (*atripalpe*, *Brit. Cat.*), see *Ent. Record*, *anteà*, p. 180, which was found very sparingly. Several specimens of *Carabus glabratus* were taken under stones. *Arpedium brachypterum* was not uncommon in moss. *Tachinus elongatus*, was found on a wall, and *Telephorus paludosus* was swept. *Carabus arvensis*, *Corymbites cupreus* var. *aeruginosus* and other commoner things were taken. Next day we journeyed to Little Salkeld to meet Mr. Britten, and much hard sweeping in a field there produced a series of the rare *Hydrothassa hannoverana*, it was evidently going over, *H. aucta*, *H. marginella* and *Prasocuris phellandrii* also occurred. A hurried rush was made to some fir-trees, where *Placusa complanata* was found, and we then took train for Barron Wood. Arriving there, we proceeded to beat the flowers of the mountain-ash, which, by the way, were nearly over, and a dozen of the beautiful *Rhynchites cupreus* was the reward of much hard work. A specimen of the rare and local *Stenostola ferrea* was also beaten from the mountain-ash, and two specimens of *Corymbites impressus*, one being the rare ab. *rufipes*, with red legs. *Malthinus frontalis*, ♂ and ♀, *Anaspis subtestacea*, *Haltica ericeti* and *Phyllobius viridicollis* were swept. *Bembidium paludosum* occurred in swarms on fine sand on the banks of a river that runs through the wood. On the 23rd, we again went to the Gelt Woods, where *Ancistronycha abdominalis* was found to be much scarcer. *Quedius auricomus*, *Q. umbrinus*, *Q. semiaeneus*, *Lesteva longelytrata*, *L. pubescens*, *Ocalea castanea*, *Homalota pavens* and *Stenus guynemeri* were all taken out of moss from a waterfall. An interesting capture was *Phyllobius glaucus* and *P. alneti* taken *in cop.* *Hydroporus davisi* and *H. septentrionalis* were fished out of small pools in the rocks at the side of the river. *Limonius cylindricus*, *Pachyta* *cerambyciformis*, *Agathidium nigrinum*, etc., were swept. The next day I took leave of my friends and went on to Rannoch, and subsequently to Edinburgh to stay with my friend Professor Beare. I shall always remember with pleasure my very pleasant visit to Cumberland. —HORACE DONISTHORPE. *September 18th*, 1903.

EPICOMETIS SQUALIDA, SCOP., AT WEYMOUTH.—Mr. Forsyth, of Weymouth, has sent me a specimen of this beetle to name which he took on May 4th last in the town. It is, no doubt, an introduction, and occurs in southern Europe—France, Dalmatia, Cyprus, etc. The specimen is in very perfect condition. It comes near to *Oxythyrea funesta*, another of our doubtful species, supposed to have been taken by Sidebotham and others.—IBID.

CALOSOMA SYCOPHANTA AT WEYMOUTH.—On July 2nd last, I captured a specimen of *Calosoma sycophanta*, which had taken shelter in my next door neighbour's hall, fortunately it is quite perfect.—A. FORSYTH, 20, Ranelagh Road, Weymouth.

LEMA ERICHSONI AT SLAPTON LEY.—When looking over my collection a short time ago Mr. Donisthorpe pointed out to me that I had two species of *Lema* under one name, *viz.*, *Lema septentrionis*, Weise, given to me by Dr. Chaster, and taken near Dublin, and *L. erichsoni*, Sufr., which I took myself at Slapton Ley on April 12th, 1902.—NORMAN H. JOY, Bradfield. *September 21st*, 1903.

COLEOPTERA AT SOUTHPORT.—While attending the British Association meeting at Southport, from September the 9th to the 14th, I had the pleasure of doing a little collecting in the company of and under the guidance of Dr. Chaster; Mr. Burgess Sopp was too busy with his official duties in connection with the meeting to spare time for collecting. Mr. B. Tomlin, who was staying in Southport at the same time, accompanied us on our trips, and guided me on my visit to the foreshore near Hightown. The weather was abominably bad most of the time, and, on Thursday, the 10th, there was a torrential downpour lasting all day, with the result that most of the country was put under water. On the afternoon of Friday, we visited the Birkdale sandhills to see if we could collect any flood refuse, and managed to fill two or three small bags. I had to bring my own bag away, and was not able to examine it until I returned to Edinburgh after my holidays on the 19th. Out of it I was very pleased to take a series of *Parnus nitidulus*, Heer, and many other things, including the following:—*Philonthus nigritulus*, Grav.; *Anisotoma dubia*, Kug.; *Bledius fuscipes*, Rye, and *Aphodius plagiatus*, L.; single specimens of *Anisotoma furva*, Er., and *Hydnobius punctatissimus*, Steph., were found on the sand.

On Sunday 13th, with Mr. Tomlin, I visited the foreshore at Hightown, and secured several of the specialities, such as *Phytosus nigriventris*, Chev., *Oxytelus maritimus*, Thoms.; *Bledius opacus*, Block., *Helops pallidus*, Curt., etc. Later in the afternoon we swept up *Apion dissimile*, Germ., in plenty off its foodplant, the hare's-foot trefoil, in a sandy field near Mr. Burgess Sopp's house; this I believe is a new record for the district. On the afternoon of Monday 14th, a hurried visit to the Southport sandhills secured *Apion confluens*, Kirby, in some numbers off *Matricaria*, it had only been taken previously very sparingly by Dr. Chaster at the same spot. Lastly we found *Atomaria fimetarii*, Hbst., in the utmost profusion in fungi growing on a bank of tipped refuse. A sudden shower then put an end to our collecting, and to hopes of *Anisotoma*, the chief purport of our quest that afternoon.—T. Hudson Beare, F.E.S., 10, Regent Terrace, Edinburgh.

Aphanisticus emarginatus, F.: a species of coleoptera new to Britain.

By HORACE ST. J. K. DONISTHORPE, F.Z.S., F.E.S.

When sweeping in Parkhurst Forest, Isle of Wight, on August 7th last I found a little beetle in my net, which I took to be *Aphanisticus pusillus*, the only species of the genus known to occur in Britain. As this was new to me, I remarked to Mr. Malcolm Burr, who was with me at the time, that I had taken a rare beetle, and must try and get more. After some little search, an open glade was struck which appeared to me to be just the place, and a little sweeping soon produced more. After some 50 specimens had been obtained, we returned to Freshwater. I visited the spot twice afterwards, and in all took over 200 specimens, and could have taken many more. The beetles were all swept from rushes in flower. When I got home I proceeded to distribute specimens among my friends, amongst others Dr. Joy, who told me he had swept one specimen of *Aphanisticus pusillus* in his own district. When he was setting the specimens I had given him, he was struck by the difference in shape between his insect and mine, and wrote to me about it. At first I thought he might have a new species, but on thinking the matter over, it seemed to me more probable that from an old forest like Parkhurst mine would be the new one. On working mine out with Aclogue (*Faune de France*), I at once came to the conclusion that such was the case, and that my species was *Aphanisticus emarginatus*, F. On comparing them with types at the museum, I found that I was correct, and thus have the pleasure of making a very interesting addition to our list.

The distribution of *A. emarginatus* is, according to the European catalogue, Southern and Middle Europe. It differs considerably from *A. pusillus* in shape, being longer, more cylindrical, and the elytra more narrowed in the middle, thus giving the insect what one might describe as a longer waist; the thorax, moreover, is much less transverse. The apex of the elytra in the ♂ (?) is flattened, and exhibits a slight depression, that of the ♀ (?) being simple.

In Canon Fowler's *Col. Brit. Isles*, iv., p. 71, under *Aphanisticus pusillus*, there is a record "Carisbrooke Castle, Isle of Wight." This refers to a specimen taken by Canon Fowler himself, who tells me he lost it. It is quite possible that this specimen was my species, as Parkhurst Forest is very near to Carisbrooke.

NOTES ON COLLECTING, Etc.

Curious resting-habit of Mania maura.—I have recently come across a curious resting-habit of *Mania maura*. I found no less than fifteen of them in a space something under a yard square. They were "piled up," if I may use the term, in one instance seven were touching each other. In the majority of cases their heads were together, so that they were resting similarly to the way moths sometimes cluster round a spot of treacle.—Mervyn G. Palmer, 6, Court Road, West Norwood, S.E. *September* 10*th*, 1908.

ABUNDANCE OF LARVÆ OF PYRAMEIS ATALANTA.—It may be well to put on record the great abundance of the larvæ of *Pyrameis atalanta* at the present time in the Strood district. They appear to be everywhere, and I have found several crawling up telegraph posts, &c., for pupation.—J. OVENDEN, Frindsbury Road, Strood, Rochester, Kent. *September 2nd*, 1903.

AGROTIS AGATHINA, ACTEBIA PRÆCOX, AND AGROTIS VESTIGIALIS IN WORCESTERSHIRE.—On September 19th my friend, Mr. G. D. Hancock, and myself when searching heather for larvæ of *Anarta myrtilli* were fortunate enough to capture examples of the above species on a sandy, heather-covered common in Worcestershire. *Agrotis agathina* was somewhat worn, but still good enough for identification. Only one specimen of *Actebia praecox* was taken on this occasion, but another one was captured in July, 1901, at the same spot, by Mr. J. Peed. The appearance of such coast insects as *A. vestigialis* and *A. praecox* so far inland as Worcestershire, as well as *A. agathina*, which is new to our county list, seems worthy of recording.—WILLIAM H. EDWARDS, Hastings Museum, Victoria Institute, Worcester. *September 24th*, 1903.

LEUCANIA EXTRANEA, L. LOREYI, AND L. VITELLINA IN SOUTH DEVON.—During a short holiday of twelve days in South Devon, in the early part of September I had the good fortune to capture one each of the above-mentioned rare British species which I think is worthy of placing on record. *L. loreyi* was taken on September 6th flying wildly over rough herbage at dusk, and *L. extranea* came to sugared flower-heads on the night of September 8th. I also took at sugar one *L. vitellina* on September 9th and one *H. peltigera* on September 14th. All were taken on the coast, and, with these exceptions, no other good things turned up, though, in spite of cold rough winds, some of the common species, such as *Peridroma suffusa*, *Agrotis segetum*, *Noctua c-nigrum*, and *Phlogophora meticulosa* appeared in abundance. The latter was simply a pest at sugar.—WILLIAM H. EDWARDS, Hastings Museum, Victoria Institute, Worcester. *September 24th*, 1903. [Since this and the preceding note have been in type, they have already appeared elsewhere. We have before asked correspondents not to send us notes of captures that they are publishing elsewhere. There is always so much outstanding matter that duplication is much to be deprecated.—ED.]

LENGTH OF LIFE OF IMAGINES OF XYLINA SEMIBRUNNEA.—It may interest you to hear that this year I obtained ova from a large quantity of *Xylina semibrunnea*, which hatched well, but somehow or other the larvæ disappeared. I kept them on small ash-trees growing in pots and covered by a glass cylinder, so I do not know how they get out. I have tried for some years now to get ova, but have never succeeded before. I kept two imagines which I got on sugar in November, and added three more which I took on sugar in February. I think two of these were females. I never saw them *in cop.* Three of the five insects died about three weeks ago. The remaining two were alive when I left home on June 23rd, but were dead when I returned on the 27th. They seem to have a long term of life in the imaginal stage.—E. H. THORNHILL, Boxworth, Cambridge. *June 29th*, 1903.

Cossus COSSUS AT SUGAR.—In the July number of the *Entomologist's Record*, p. 215, mention is made of two examples of *Cossus cossus* flying to light at Lewisham. On the night of July 2nd I took one in my garden on sugar, and the year before last I took the larva on sugar.—Jos. F. Green, West Lodge, Blackheath. *July 27th*, 1903.

Sudden appearance of Pyrameis cardui.—On September 21st I first saw this species. I then took about 30 (mostly worn); on the 24th I visited the locality again, and they were in countless hundreds. I never saw such a sight; a large percentage were worn. To my mind there is little doubt we have just had a "flock" from over the water, as my correspondents from all parts write to say that the species has suddenly appeared in worn condition. Even here in Bexley, which is a poor Diurni district, they are flying about among bricks and mortar. I found *Plusia gamma* a fearful nuisance when netting *P. cardui.*—L. W. Newman, Bexley, Kent. *September 25th*, 1903.

Great abundance of Vanessids in the Strood district.—I have already referred to the astonishing abundance of the larvæ of *Pyrameis atalanta* in this neighbourhood during the past month. Every bed of nettles has had its tented inhabitant, and I have taken hundreds without any special effort. The first one pupated on August 4th, and I found one not half-an-inch long yesterday. On the other hand, *Aglais urticae* has been scarcer than usual. During the last two seasons *Pyrameis cardui* has been very rare here, but is just now appearing in large numbers. On a flowery bank near here, on the 25th inst., I netted a dozen examples in very fair condition. There were many others, although I did not trouble to make any further captures. It is remarkable that I have seen no traces of larvæ this year, and I only found one last year.—J. Ovenden, Frindsbury, Strood, Kent. *September 27th*, 1903.

Abundance of Pyrameis cardui in Essex.—On Saturday, September 12th, between Southminster and Tillingham, I first saw *Pyrameis cardui* in apparently good condition. Again, on September 26th, between Aveley and Rainham, they were quite abundant.—J. H. S. Harrison, Thorold Road, Ilford. *September 28th*, 1903.

Pyrameis cardui and Plusia gamma at Chislehurst.—*Pyrameis cardui* was first seen here on September 23rd, since which date it has been seen daily whenever a glimpse of sunshine occurs. Only one was seen the first day, and not more than six on any other, but I have not been to a likely spot, *e.g.*, a clover field, etc., to find them in numbers, all that have come under my notice being in the roads or garden. Having observed no larvæ in the district, one would suppose they were not natives. Several *Plusia gamma* have been recently seen; they appeared before *P. cardui*, but unfortunately the exact date was not recorded.—B. A. Bower, F.E.S., Chislehurst. *September 29th*, 1903.

Pyrameis cardui at Reigate.—*Pyrameis cardui* has appeared in this district in numbers during the last few days. I think the first I saw was on September 20th or 21st, but I cannot be positive as to the date.—T. A. Chapman, M.D., Betula, Reigate. *September 27th*, 1903.

Abundance of Pyrameis cardui and P. atalanta at Ilford.—These two species have during the last few days been most abundant in this district. I first saw *Pyrameis cardui* about September 14th, *P. atalanta* a day or two later. Both species appeared to be in bred condition when first seen, and became more abundant a few days after their first appearance. This morning, although their first bloom has worn off, their condition is still very fair, but their numbers are less. I am of opinion that the *P. cardui* have fed up in this neighbourhood, as I saw examples, that may probably have been their parents, earlier in the year, but I have not searched for larvæ. Last year I found a larva of *P. cardui* here during the first week of October; this duly pupated, and I later bred an imago from the pupa. With regard to *P. atalanta* there is no doubt as to their having been bred in the locality, as I have taken the larvæ plentifully.—Colin Murray, 9, Bedford Gardens, Ilford, Essex. *September 29th*, 1903.

Pyrameis cardui in Durham.—On September 23rd I was travelling along the railway between Castle Eden and Ryhope, in the county of Durham, when I observed scores of *Pyrameis cardui*, all in very fair condition. I have never seen so many before in this district, for the railway-banks were all alive with them. It seems late for them, though the season is late and a bad one. Do you think they had crossed from the continent? They were not at all ragged, but appeared in good condition.—H. Milburn, 27, Katherine Street, North Road, Darlington. *October 1st*, 1903.

Pupation of Anthrocera filipendulæ.—Whilst at Dover during the first week of August, 1903, I observed a curious collection of cocoons of *Anthrocera filipendulae* spun up on the iron railings facing the military prison on the cliffs. In the space of about 50 yards, 87 cocoons were counted, all from 3ft. to 5ft. above the ground, and placed so as to be sheltered from the wind. In each case the cocoon was darker than usual, and the railings being a rusty black, it looked as if there had been some attempt at adaptation to the surroundings, the coloration of the cocoons being, in each instance, of a dirty brown that did not form at all a bad resemblance. Of two other larvæ found crawling up the same railings, one was placed in a willow chip box, and the cocoon was of exactly the same colour as the box, whilst the other was placed in a glass-topped box (white-lined), and produced an almost satin-white cocoon, both of which harmonised well with the colour of the material on which they were placed. Observations on the cocoons of this species would, one fancies, prove interesting.—C. P. Pickett, F.E.S., Dawlish Road, Leyton. *September 10th*, 1903.

Lepidoptera at Oxshott.—On July 25th a run down to Oxshott produced the following lepidoptera:—*Plebeius aegon*, very scarce indeed; this seems extraordinary, as it has simply swarmed in past seasons. *Enodia hyperanthus*, getting worn; *Epinephele tithonus*, just emerging; *Thymelicus linea*, fully out and in fresh condition; *Pamphila sylvanus*, just showing; *Anarta myrtilli* was darting over the ling, as also was *Pachycnemia hippocastanaria* (2nd brood). I also captured one very dark form of *Gnophos obscurata* and three *Selidosema plumaria*. The weather was somewhat dull, and probably this accounts for the small number of captures.—C. P. Pickett, F.E.S., Leyton.

Note on the emergence of Plusia moneta.—On the evening of June 23rd I had in front of me a cage containing pupæ of *Plusia moneta*, when, at 10.50 p.m., I noticed one about to disclose its imago, and watched the proceeding through to the finish. At 10.50 p.m. the moth left the pupa-case and crawled up the cage. I opened the door of the cage and let it come out so as to see it more closely. It held on by the front pair of legs only. The middle and hind legs during the first two minutes were all on the move, and, being of extra length, they come in contact with the wings directly expansion takes place, when there is a violent movement of the wings in order to get the wings free from the legs, the expansion taking place from the lower parts of the hindwings first. Thus, I noted that, by 10.57 p.m., the wings were half expanded, by 11 p.m. they were fully expanded, and by 11.1 p.m.* they were stretched out to dry, and remained so till 11.19 p.m., when the wings were half opened, and kept so until 11.40 p.m., when they were gradually closed, another ten minutes being taken to complete the process. The moth now assumed its natural position, after taking exactly one hour for expansion. A word concerning its natural position of rest, which is very curious, may prove interesting. The wings are folded very flatly, the front pair of legs are stretched fully out, and just clasp a dry *Delphinium* leaf, the head being quite ·5in. away from the leaf. The hindmost pair of legs are kept perfectly flat against the body, and just clasp the leaf, the end of the wings and body touching the leaf. The central pair of legs are drawn in against the body. In this position the moth is remarkably like the dried twisted ends of the lower leaves, which are of a yellowish-brown colour, the legs representing the dried twisted spikes of a *Delphinium* leaf. The hair on the thorax during expansion is flat, but gradually dries, forming a beautiful hood with side frills, and takes some ten minutes to attain its natural shape. If the imago be touched it will fall to the ground and feign death, but if touched again it is up immediately.—C. P. Pickett.

Lepidoptera at Dover and Folkestone in August and early September, 1903.—The August of 1903 will long be remembered by British lepidopterists for its extraordinarily wet and windy weather. During the last ten years there has been no August approaching it, and although such insects as were seen were out earlier than in August, 1902, their numbers were amazingly small. Such species as *Hipparchia semele*, *Melanargia galathea*, and *Pararge megaera*, which usually absolutely swarm in the district in their chosen localities, were few and far between. The commonest insect certainly was *Epinephele janira*, of which several nice bleached specimens were captured, whilst towards mid-August *Pieris rapae* and *P. brassicae* became very common. No *Colias hyale* occurred, although one would have expected it after several captures in early June, and one suspects that the wet and dull weather was the cause of its failure. The following diary notes will show how bad things were:—Dover: *August 1st.*—Wet, and too windy for anything to be on the wing; a few *Polyommatus corydon* seen, evidently just emerging; *Epinephele janira*, in fine condition; searched closely, and found three with white patches. The undersides of the specimens observed were particularly well marked. *August 2nd.*—Remained dull and windy, and I obtained only a few *E. janira*, which I kept for their striking undersides. Towards evening it began to rain, but not enough to keep me indoors. Searched two hours for larvæ of *Theretra porcellus*, but got nothing. *August 3rd.*—A terrible storm of wind and rain from 2 a.m. to

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* At this point the middle and hind legs were brought into use to hold the leaf firmly, the body was drawn up so as to have a slightly arched appearance, it remained so for about two minutes, when the body was thrust straight out, and remained so, *in the case under* observation, till 11.19 p.m.—C.P.P.

9.30 a.m., suddenly cleared about 10 a.m., and there was a hot sun, hastened to the collecting-grounds, and found *Argynnis aglaia* abundant and active, the ♂ s worn, the ♀ s just emerged; *Anthrocera filipendulae* just emerging, and consequently not in the amazing abundance of last year here; *Polyommatus corydon* common, but not yet fully out, the ♀ s only just showing, and many of these with a ground colour of a dirty blackish-brown, and different from those with a deep black ground coloration often taken; spotted ♀ s were infrequent, although in some years they are very common, but the ab. *inaequalis*, Tutt, was more abundant than I have seen it before; two dwarf ♂ s were captured, also two underside aberrations, with most of the spots absent. Besides a few good undersides of *Epinephele janira*, nothing else was seen worth capturing. *August 4th-7th.*—In London; returned to Dover on the evening of the 7th. *August 8th.*—The first good day of the month; brilliant cloudless sky, no wind, and very hot. *Polyommatus corydon* was now fully out, and I selected four dwarf ♂ s and three underside aberrations; a single *Cupido minima* of the 2nd brood was the only one seen during the month; *Chrysophanus phlaeas* and *Pamphila comma* just coming out; two half-grown and other smaller larvæ of *Pyrameis cardui* seen*, but not taken till later in the month. I searched again in the evening for larvæ of *Theretra porcellus*, but did not find a single example. *August 9th.*—Very windy, with only occasional gleams of sunshine; nothing would fly. A single underside ♂ aberration of *P. corydon* was taken, and a ♀ with very dark underside, the spotting normal blackish-grey. A few undersides of *Epinephele janira* completed the captures of the day. *August 10th-11th* in London, returning during the afternoon of the 11th to Dover in pouring rain. *August 12th.*—A dull day, with occasional peeps of sunshine and slight wind. The ♂ s of *P. corydon* were now getting worn, the ♀ s fully out; *P. icarus*, *P. astrarche*, and *Chrysophanus phlaeas* just emerging; a single ♀ *Argynnis aglaia* captured whilst drying its wings, but a long search for the empty pupa-case proved fruitless; fourteen aberrations of *P. corydon* were taken, including several spotless undersides (mostly ♂ s). The evening cleared and proved beautiful and calm, so another journey was made to the cliffs for larvæ of *T. porcellus*, but the search again proved fruitless. *August 13th.*—Another good day, brilliant blue sky, and no wind. Butterflies flew freely, but *Argynnis aglaia* was wild and difficult to catch; *Pamphila comma*, with its rapid and artful flight, was darting about on the dwarf thistle-heads; *Polyommatus corydon* ♀ s were now abundant, and some very interesting aberrations were taken, one with the upperside of a rich black, without markings, the orange spots being entirely absent, two brownish examples, several ab. *inaequalis*, Tutt, many ab. *obsoleta*, Tutt, also one approaching ab. *striata*, Tutt, one dwarf of exceedingly small size (not larger than *Cupido minima*); a few dwarf ♂ s were also taken, and deep-banded ab. *marginata*, Tutt, one with the black band suffused halfway across the wings, and, I believe, ab. *suffusa*. These forms are wonderfully interesting, and work out exceedingly well according to the tabulation in Tutt's *British Butter-*

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* This appears to be important in view of the sudden appearance of the imagines of this species on the east coast in large numbers about September 20th. Can Mr. Pickett give particulars as to the abundance or otherwise of larvæ towards the end of August or in early September? Any details relating to the appearance of this species during the autumn would be most acceptable.—ED.

flies. The shades of blue on the uppersides, and the variation of the ground colour of the undersides, also proved most interesting. A search in the late afternoon, when *P. corydon* was at rest, rewarded me with the record of six specimens of ab. *obsoleta* in a few minutes, including two pairs *in copulâ*, both ♂ s and ♀ s belonging to this aberration. I have never had such luck with this aberration before, nor seen the aberration paired. I tried to get ova, but could not induce the ♀ to lay, although it would have been wonderfully interesting to have seen if the progeny would have followed the *obsoleta* form. A few more bleached forms of *E. janira* concluded the day's work. The evening was perfectly calm, and followed a glorious sunset, and I spent the time on the cliff again searching for the larvæ of *T. porcellus*, but found none. This was my last attempt this year to find the larva at Dover. *August* 14*th*.—Awoke to find it pouring in torrents; spent the whole day setting the captures of the previous day. *August* 15*th*.—Terrible storm of wind; an afternoon walk on the cliffs produced three aberrations of *P. corydon*, one a ♀ ab. *obsoleta* without a single spot on the underside. *August* 16*th*.—Wind very high and heavy clouds, but intervals of hot sun. I captured a few more underside aberrations of *P. corydon*, mostly ♀ s; a few *Epinephele janira* undersides also were captured. These constituted the day's take. *August* 17*th* returned to London, and on the 18*th* went to Folkestone. FOLKESTONE: *August* 19*th*.—Dull; train to Dover, overtaken by sundry thunderstorms; captured six aberrations of *P. corydon* and a few *Epinephele janira* undersides, but rain drove me home. *August* 20*th*.—Poured from morn to night. Under cover of umbrella, I walked along sea-front, found a single *Bryophila muralis*, several empty cocoons thereof, and two *B. perla* on an old wall. *August* 21*st*.—Windy and wet; only one *B. perla* off the same old wall. *August* 22*nd*.—Dull, with slight rain in morning. Went to Dover, where the afternoon was very fine. *P. corydon* was now nearly over, and few aberrations were taken; a few *E. janira* also captured, one only bleached, but one ♂ was taken with ♀ coloration, the brown patches on the forewings being very large. *Plusia gamma* put in an appearance. *August* 23*rd*.—Brilliant day, very hot and oppressive; a walk to the *Polyommatus bellargus* ground showed that they were not yet out. *P. icarus* and *P. astrarche* were still very fresh, and a few *Acidalia ornata* were taken, also a few larvæ of *Sphinx ligustri*, but a close search, both at Dover and Folkestone for larvæ of *Manduca atropos*, in places where I had previously taken them, was without result. *August* 24*th*.—Returned to London, going back to Folkestone on September 4th. *September* 5*th*.—Dull; turned out with Mr. W. J. Kaye for *P. bellargus*, found them fully out (Mr. Garland says they appeared on August 27th), although not abundant, as was expected from the rarity of the species here in June (when I only took eighteen specimens in four visits) and the bad weather from June onwards. It was noticeable that the ♀ s were more tinted with blue than usual, an unusual feature in the second brood; two ♂ s taken were of a greenish hue, another ♂ with two small black dots on forewings, and two slightly aberrant undersides; *P. icarus* and *P. astrarche* were mostly worn, but I captured a ♀ *P. icarus* with the spots on the underside elongated, and also a pretty *P. astrarche* with the spots on the underside almost *obsolete*; an afternoon walk through the Warren produced only a single *Acidalia ornata* and a few *P. bellargus* on the face of the cliffs. *September 6th.*—Very dull; obtained a few *P. bellargus* before 11 p.m., when it began to rain, and continued raining hard all day. We left Folkestone on the evening of September 6th, when it was still raining, and there is no doubt that this was the most prominent feature of my summer holidays of 1903.—C. P. Pickett, F.E.S. Dawlish Road, Leyton. *September 20th*, 1903.

CURRENT NOTES.

Our readers will learn with regret of the death of our valued correspondent, Professor Augustus Radcliffe Grote, M.A., which took place on September 12th. He was an Englishman, born near Liverpool, but was taken by his parents to America, where the greater part of his early and middle life was spent, and where the greater part of his entomological work was done. At a time when all was chaos in American entomology, he and one or two other pioneers raised the study of lepidoptera to a good level, and, by the publication of his check lists, made possible a great deal of the rapid advance that has taken place in American lepidopterology during the last two decades. He hated superficial work, and his temperament led him to expose it, whenever he believed he had found it, in no measured terms; and, like all people who take strong sides, he made many friends and enemies, and was possibly at one time the best loved and best hated lepidopterist in America. He was a true lover of nature, as his notes, published in the *Entomologist's Record*, vol. vi, etc., and elsewhere, show, and he attempted, not without success, to grapple with the philosophical questions that have since been discussed by others with better opportunities in the way of material and leisure. His one complaint was that luck was against him, and his wish to be attached to the staff of the British Museum when he returned to Europe in 1881, and where he might have done excellent work, was frequently in his mind when writing to his friends. His collection is in the Natural History Museum, the specimens incorporated with those of so many other excellent naturalists unknown to the younger generation of today, who have had things made easy for them by the work of such men as he whose loss we mourn. His reawakening of the sleepy museum at Hildesheim, to which he attached himself as an honorary helper some few years ago, is fresh in the memory of all of us, and there must be few British lepidopterists worthy of the name who are not familiar with the quarto brochures that have issued thence of late years. The greater part of his work, however, has even recently been published in the American journals and transactions of various societies, and it is, if of unequal value, mostly of high scientific importance. He leaves a widow and family to mourn his loss, and to them our sympathies are extended on the loss of one who, from continuous correspondence during the last twelve years, we have learned to look upon as a respected and honoured friend.

Mr. G. M. Russell (*Entom.*, p. 227) remarks the well-known seasonal change in the colour of the larva of *Geometra vernaria*, and adds, "I do not remember seeing any previous record of the seasonal change of colour of the larva." One suspects Mr. Russell's acquaintance with entomological literature to be limited. It would be easy to put one's hand on half-a-dozen references to the fact, *e.g.*, Hewett, *Ent. Record*, ii., p. 188 ; Farren, *loc. cit.*, p. 202 ; Farren, *op. cit.*, iii., p. 171 ; Tutt, *Practical Hints for the Field Lepidopterist*, ii., p. 28, occur to us off hand.

Mr. Denis Turner (*Entom.*, p. 246) records, among other species, the capture of *Coenonympha iphis* at Val André, in Brittany. He considers "the colouring of the underside of this species, simple as it is, one of the beauties of the insect world," and adds, "Horace's simplex munditiis . . . . seems to fit the butterfly exactly." *Coenonympha iphis* is a most unlikely species to occur in Brittany. It may, of course, have occurred there, but we suspect not, and if this species be wrongly recorded others may be, and so the whole question of geographical distribution is stultified by the publication of erroneous facts which might be verified in every picture book of European butterflies. Such records should be submitted to a competent authority before publication.

Mr. Houghton verifies (*Ent. Mo. Mag.*, p. 219) several points already noted by continental lepidopterists, but not before observed in this country, in the life-history of the Gelechiid, *Recurvaria nanella*, the larvæ of which, in August and September, 1902, he found mining the leaves of apricots, and which they left in middle October to form silken hibernacula in crevices, pieces of cloth, axils of the buds, etc., and in which they remained as larvæ all the winter, leaving these in late February to bore into the buds, binding the buds with silk, and clearing out the contents of the bud. At the end of May the bud is lined with silk, and pupation usually takes place within. On the emergence of the imago, which takes place principally during the first fortnight of July, the pupa-case does not protrude from the puparium. The larvæ swarm at Worksop on apricots and peaches, and also affect cherry and plum, but have not been noticed there on apple and pear, with which the species has hitherto been associated. Wing connected it with pear, Douglas with apple, whilst the German entomologists have long since known also its partiality for stone-fruit trees. The latter, however, usually state that the larvæ injure the shoots as well as the buds, but this Mr. Houghton does not find to be the case.

Dr. D. Sharp (*loc. cit.*, p. 221) adds *Pachygaster minutissimus*, Zett., to the list of British Stratiomyid diptera on the strength of the capture of one specimen at Wells in July, 1902. He also notes the capture this summer in the New Forest of a large *Pachygaster*, which he makes out to be *P. tarsalis*, Zett., but is not altogether satisfied with the determination.

Mr. Cottam records (*loc. cit.*) the capture of *Aphelia argentana* in July, 1902, at Dilham in Norfolk. This is, even on the Continent, we believe, so completely confined to habitats of moderate altitude or latitude that confirmation appears to be advisable.

Mr. Charles Capper writes us of the capture of a single specimen of *Hemithea fimbrialis*—a species so closely allied to *H. strigata* that we believe we have once or twice recorded (*e.g.*, *anteà*, xiv., 227) its capture on the Continent as that of the latter species, with remarks on its unusual habitat—at Beachy Head, on August 7th, 1903. The locality appears to us to savour much more of that of the former than of the latter species. Mr. Capper promises to let Mr. Prout examine the specimen, so that we hope to issue a further notice. In the meantime, doubtful *H. strigata*, from downs and open places, should be carefully examined.

The Rev. C. R. N. Burrows (Mucking Vicarage, Essex), who is preparing for publication a paper on *Geometra papilionaria*, asks for information concerning the variation (published or otherwise) of this species. Any other interesting information regarding habits of the species in any stage would also be welcome.

Baron de Combrugghe de Picquendaele gives (*Ann. de la Soc. Ent. de Belg.*, xlvii., p. 270) an interesting note on the larva of *Olethreutes bifasciana*, which he says is full-fed about mid-May, pupation taking place from then to mid-June, freshly-emerged imagines being taken in early July.

Mr. A. H. Clark writes (*Can. Ent.*, xxxv., p. 219 *et seq.*) an interesting paper, entitled "A supposed migration of *Pieridae*, witnessed in Venezuela in the summer of 1901." It should be referred to by all interested in the subject of geographical distribution, although parts of it appear to be written very markedly from the human standpoint.

Mr. August Busck gives us *A Revision of the American Moths of the Family Gelechiidae with Descriptions of New Species.*† This pamphlet collects together, from various sources, the American Gelechiid species that have been described, with some critical notes thereon, and will form an excellent basis for future work. At the same time, it illustrates amazingly from the natural history, apart from the literary, standpoint, the present state of our ignorance with regard to the American Gelechiid fauna. Just as, in Britain, we expect little or no real natural history to issue from our professional entomologists at the Natural History Museum, so we cannot expect much natural history to come from the professional entomologists attached to the various agricultural stations throughout the United States. That we occasionally, in England, and more frequently in America, get a great deal more than we have a right to expect, does not alter the general fact, and we are still waiting for the leisured amateurs in America to make a detailed study of the life-histories of these insects, in the same way as did Stainton here, not haphazard, one species now and again when chance throws eggs or larvæ in one's way, but systematically, continuously, and as a labour of love; only in this way shall we learn anything of the life-histories of the Gelechiids of North America, of which Mr. Busck has so carefully catalogued their names, and described the imagines. In a work like this, in which many new species are described on imagines only, the life-histories being unknown, good figures would have been a great boon.

Mr. Hans Hirsch describes (*Verh. der k.k. zool.-bot. Gessel. in Wien*, liii., p. 270) a new form of *Everes argiades*, under the name *depuncta*.

We are pleased to see that Mr. Gillmer has taken up the scientific description of lepidopterous eggs. He has given us the first detailed one that we remember having seen done by a German lepidopterist, *viz.*, that of *Erebia glacialis*, in the *Societas Entomologica*, xviii., p. 74.

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† *Published* at the Government Printing Office, Washington, U.S.A.

We dare say there are others, really good ones, but most of those we know narrowly approach the style, "Yellow, conical, laid on cabbage," we all once loved so well, or like Newman's historical description of the egg of *Ptilophora plumigera*, "The egg is brown and laid in November."

Mr. Edward Saunders has found a new *Ammophila* in Jersey, closely allied to *A. hirsuta*, Scop., which he describes (*Ent. Mo. Mag.*, p. 247), under the name of *Ammophila luffii*, in honour of Mr. W. A. Luff, who has done so much towards the investigation of the fauna of the Channel Islands. Mr. Saunders also confirms *Andrena pilipes*, Fab., *Osmia rufa*, Linn., *Podalirius retusus*, Linn., and *Bombus pratorum*, Linn., as inhabitants of Jersey.

Mr. Porritt records (*Ent. Mo. Mag.*, p. 251) the capture of several specimens of *Æschna isosceles* on the Norfolk broads in the neighbourhood of Stalham, also long series of *Libellula fulva*, *Orthetrum cancellatum*, etc.

About ten or twelve years ago, at one of the meetings of the South London Entomological Society, we were somewhat surprised at an old gentleman, a very regular attendant at the meetings, and whom nobody seemed to know, introducing himself to us as Mr. Samuel J. Wilkinson, the author of the well-known and more or less classic *British Tortrices*, for, whatever may be said to the contrary, nothing better on the subject has yet been produced in this country. From then onwards a fortnightly chat was usually indulged in, until some three or four years since, increasing deafness and objection to being out late at night, made his visits at the meetings of the society less frequent, and for some time they have ceased alotgether. On September 16th last, the veteran died, in his 88th year, having, we believe, added nothing to the sum total of entomological literature, since the publication of his first and last work in 1859.

Mr. Wheeler's new book, *Butterflies of Switzerland and the Alps of Central Europe*, has just been published. The price is 5s. (6s. interleaved). It is of the highest value to all collectors of butterflies, even those who confine their attention to British ones. A review by Mr. H. Rowland Brown will appear in our next issue.

The *Handbook* of Southport and surrounding district, prepared by the Local Committee for the meeting of the British Association, which was held there from September 9th to the 16th, contained, as is now usually the custom in these handbooks, a series of interesting articles on the geology, botany, and zoology of the district. In the zoological section there were three articles of interest to entomologists, one of which, by Messrs. F. N. Pierce, F.E.S., and J. R. Charnley, F.E.S., deals with the lepidoptera. A brief introduction describes generally the nature of the district, and gives some information in reference to the more interesting captures which have been made, and also a brief note as to the various local lists which have been published. Then follows a list, with localities and habitats, of some of the more interesting captures both of the Rhopalocera and Heterocera. The second article by Dr. Chaster and Mr. Burgess Sopp, F.E.S., deals with the celeoptera of the district. The authors first give an account of some of the more striking captures which have been made in this district, including such remarkable rarities as *Anisotoma furva*, *A. picea*, *Rhizophagus coerulipennis*, *Aphodius scrofa*, *Heptaulacus villosus*, *Ammoecius brevis*, *Aegialia rufa* and *Anthicus bimaculatus*, as to which latter rarity it may be remarked that the authors have taken it quite commonly during the past summer in a very restricted locality on the sandhills. Then follows a list of some of the more noteworthy general captures, divided under the headings of Northern Forms, Southern Forms, Intermediate Forms, and General Rarities. In every case not only is the locality given for each insect, but also very interesting notes as to the habitats, and lastly a very complete bibliography is attached to the article. The whole list is one of the best we have seen in these handbooks. The last article to which we need refer deals with the Araneae, and is by Dr. Jackson. Here again, in addition to a few general notes, a fairly complete list of the most interesting of the spiders which have been captured locally is given, with notes as to habitats and special localities. We congratulate the Local Committee at Southport on a very admirable handbook, and one which will be of great use to those studying the local distribution of our fauna.

SCIENTIFIC NOTES AND OBSERVATIONS.

VARIATIONS CONFINED TO ONE SEX.—Referring to the note on this subject (*Entom. Rec.*, vol. xv., p. 237), I think Mr. Doncaster will find what he wants in the *hospita* form of *Nemeophila plantaginis*. The ♂ s are very constant, and though I have some ♀ s that have almost the same coloration in the forewings, the hindwings lack the beautiful white of the ♂ *hospita*. I have never seen or heard of a ♀ var. *hospita*. Will your subscribers kindly look over their series and give us their experience? This is the first example that occurred to me on reading Mr. Doncaster's note, but there may be others.—HERBERT MASSEY, F.E.S., Ivy Lea, Burnage, Didsbury. *September 28th*, 1903.

VARIATION.

ABERRATION OF BISTON HIRTARIA.—During April last I bred an unusual aberration of *Biston hirtaria*, in which the markings, which in the type are black, are buff in colour; it is an exactly parallel aberration to the famous, or infamous, buff *Amphidasys betularia*, peculiar to a certain portion of Lancashire some thirty years ago, and makes me think there might have been something other than "faking" in these forms, for it was one of a number bred from a north London strain, in a cool conservatory, in which the pupæ were also kept; the remainder of the brood showed about the usual range of variation obtaining in this species.—W. G. SHELDON, Heimath, Friend's Road, Croydon. *September 2nd*, 1903.

ABERRATION OF MANIA MAURA.—One specimen of this species taken here this year is an interesting aberration, and one that I have not taken before in the same locality, where, I may add, *M. maura* has always been common, but not so abundant as in the present year. It has the apical area, the inner half of the marginal area, the circumscription of the discoidal spots, the median nervure and other nervures leading from the reniform spot to the hind margin, all of a rich pink, fleshy tint. There are no alders or willows near, but many fruit-trees.—MERVYN G. PALMER, 6, Court Road, West Norwood, S.E. *September 10th*, 1902. [Is this not *Mania maura* ab. *rosea*, Tutt, *Brit. Noctuae*, &c., iv., p. 40.—ED.]

ERRATUM.—The locality mentioned in Ent. Record, anteà, p. 215, line 6, *should be Luan*, above Corbeyrier.—G. O. SLOPER.

N O T I C E .

The **Back Volumes** (I-XIV) of *The Entomologist's Record*, &c., can be obtained at 10s. 6d. per Volume. Complete set of 14 vols. £5 7s. 6d. net. "**Special Index**" to Vols. III., IV., V., VI., VII., VIII., IX., X., XI., XII., XIII. and XIV., price 1/6 each. **Single Back Numbers** can be obtained at DOUBLE the published price from H. E. PAGE, F.E.S., "Bertrose," Gellatly Road, St. Catherine's Park, London, S.E.

Desiderata.—During the season—Ova, larvæ, pupæ, and living imagines of many species. Good exchange.—*H. W. Head, Scarborough.*

Duplicates.—Pupæ—Marginatus (Umbra), Mendica, Ochracea, Capsincola, Cucubali, Jacobææ. Larvæ—Unanimis. *Desiderata.*—Offers of ova, larvæ, pupæ, or if set imagines, butterflies only.—*J. W. Harrison, 2, Craig St., Birtley, R.S.O., Durham.*

Duplicates.—Vitalbata*, Bilunaria*, Lonicerræ*, Suasa*, Trifolii*, Lienigianus*, Ornata, Rusticata, Nigricans, Verbascalis, M. cribrum, a few good Abjecta. *Desiderata.*—Very numerous. Black pins only.—*J. Ovenden, Frindsbury, Rochester, Kent.*

Duplicates.—Ianthina*, Nebulosa, Unanimis*, Ochracea*, Leucophæa (fair), Literosa, Baja, Camelina*, Falcula*, Solidaginis, Cerago*, Silago*, Nictitans, Gemina, L. comma, Umbrosa, Comes, Unca, Fuscula, Antiqua*, Testacea, Lignata, Piniaria*, Russata*, Cæsiata, Subfulvata*, Rivata*, Autumnaria*, Tiliaria*, Quercinaria*, Fuscantaria*, Immutata, Ulmata, Boreata, etc. *Desiderata.*—Pruni, Athalia, Globulariæ, Atropos, Culiciformis, Apiformis, Albulalis, Muscerda, Complana, Gonostigma, Cratægi, Trifolii, Abietaria, Roboraria, Orbicularia, Auroraria, Rubricata, Degeneraria, Ruficinctata, Eupitheciids, Unangulata, Turca, Alni, C. ligustri, Myricæ, Cucullina, Carmelita, Chaonia, Dodonea, Ulvæ, Petasitis, Despecta, Straminea, Pastinum, and many others.—*T. Ashton Lofthouse, The Croft, Linthorpe, Middlesborough.*

Duplicates.—Ova: Protea, Comes. Larvæ: Rumicis, Marginaria, Piniaria, etc. *Desiderata.*—Ova, larvæ, or pupæ: Unangulata, Simulata, Sparsata, Jasioneata, Trisignaria, Dodoneata, Consortaria, etc.—*T. Ashton Lofthouse, The Croft, Linthorpe, Middlesborough.*

Duplicates.—Stigmatica, Lutulenta, A. sphinx, Xerampelina, Gilvago, Lunosa, Octogesima (few), Oo (few), Diffinis, Caniola, Formicæformis (types), Quadrifasciaria (fair), Syringaria, Prunaria, W-album, Lucina, Lichenaria, Subciliata, and numerous others. Full list on request.—*Philip T. Gardner, Connington Hall, Cambridge.*

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Duplicates.—Podalirius, Zanclæus, Hospiton, Machaon, Apollo, ditto with red spots forewing, Mnemosyne, Cratægi, Bryoniæ, Daplidice, Euphenoides, Sinapis (varieties), Palæno, Phicomone, Hyale, Edusa, Cleopatra, g.a. Italica, Jasius, Iris, Ilia, Iole, Clytie, Camilla, Sibilla, Urticæ (high Alpine *var.*), Antiopa, Egea (poor), Stygne, Aethiops, Liges, Lappona, Tyndarus, Circe, Hermione, Semele, Neomyris, Dryas, Egeria, Egerides, Mæra, Adrasta, Tigelius, Hispulla, Tithonus, Ida, Pasiphaë, Arcania, Darwiniana, Satyrion, Gordius, etc. Pinastri, Vespertilio, Vinula, Eremita, Neustria, Castrensis, Trifolii, Quercûs, Rubi, Yamamai, Xanthomista, Pl. variabilis, Chalcytes, etc. *Desiderata.*—Numerous Macro- and Micro-lepidoptera.—*P. A. H. Muschamp, 20, Ch. des Asters, Geneva.*

Duplicates.—British Lepidoptera. *Desiderata.*—Birds' eggs.—*A. J. Hipwell, Tavistock Road, Wisbech.*

Duplicates.—Maura, Baja, Typica, moorland Elutata, Testata, Populata, Pilosaria, Illustraria*, Angularia*, S. populi*, Versicolora*, Cæsiata, B. quercûs*, Rurea, Tristata, Ulmata, Rubricosa, Stabilis, Instabilis, C-nigrum, S. ligustri*, Machaon*, Blandina, Io*, Fimbria*, S. convolvuli, Meticulosa, Festiva, Lunosa, Aprilina, Ziczac*, Segetum (fine), Dentina, Testacea, Ambigua, Puta, Putrescens, Lubricipeda, Radiata *var.* of Lubricipeda (few black Radiata for special insects). *Desiderata.*—Numerous, well set on black pins.—*W. Tunstall, Brook House, Meltham, nr. Huddersfield.*

Duplicates.—Euphrosyne, Brunnea*, Quadra*, Extersaria*, Miniosa, Batis, Syringaria, Fimbria*, Polychloros*, Monacha, etc. *Desiderata.*—Ova, larvæ, and pupæ of many species.—*G. T. Lyle, Brockenhurst.*

Duplicates.—Io*, Aglaia, Galatea, Argiolus, Bellargus, Corydon, Betulæ*, Quercifolia*, Castrensis*, Mendica*, Salicis*, Monacha*, Pyrina, Aceris, Chenopodii, Stellatarum, Magacephala, Lunosa, Lutosa, Phragmitidis*, Puta, Putris, Morpheus, Lithoriza, C-nigrum, Testacea, Ochracea*, Prodromaria*, Abruptaria, Marginata, Betularia, Rhomboidaria, Comitata larvæ or pupæ. *Desiderata.*—Numerous.—*Colin Murray, 9, Bedford Gardens, Ilford, Essex.*

Duplicates.—Anthicus bimaculatus, Ammœcius brevis, Hydnobius punctatissimus, Anistoma furva, Gymnetron linariæ, Dyschirius obscurus, Rhizophagus nitidulus, R. parallelocollis, Syncalypta hirsuta, Mantura chrysanthemi, Bledius longulus, etc.—*G. W. Chaster, 42, Talbot Street, Southport.*

Duplicates.—Pruni* (few), Palæmon, Machaon*, Atalanta* *ab.* fracta, Valezina, Sibylla*, Cardamines* and *vars.*, Æthiops and *vars.*, Epiphron, Lucina, Ægon, Minima, W-album, Corydon, Icarus, Euphrosyne, Paphia, Edusa, Rubi, Pamphilus, etc. *Desiderata.*—Fine, to renew Arion, Salmacis, Phlæas, Lineola, Corydon, Bellargus, Adippe ♂s and ♀s, Sinapis ♀s only, Hyale ♀s, Edusa (undersides especially), Aglaia ♀s, Selene ♀s, C-album, Egeria, Megæra, Semele, Hyperanthus, Tiphon, Galatea, Epiphron (Scotch), also *vars.* of all the Rhopalocera and Scotch and Irish forms.—*H. Mousley, Burnfoot, Buxton.*

Duplicates.—Ashworthii, black Multistrigaria, nearly black Lubricipeda, Anachoreta (St. Leonard's), Rubidata, and other species. *Desiderata.*—Cœnosa, Ilicifolia, Rotundaria, Prataria, Innotata, Constrictata, Dodoneata, Stevensata, Reticulata, Bicuspis, Auricoma, Concolor, Caliginosa, Pyrophila, Satura, Gnaphalii, Dentalis, Terrealis, Stachydalis, Margaritalis, Unionalis, Literalis, Pulveralis, Myellus, Fascelinellus, Farrella, Adelphella, Bistriga, Angustella, Cephalonica, Ceratoniæ, Mucronellus, Alpina, Festaliella, Pilosellæ, etc.—*Geo. T. Porritt, Edgerton, Huddersfield.*

Duplicates.—Pupæ of Gnophria rubricollis. *Desiderata.*—Pupæ.—*E. Morris, Brockenhurst, New Forest.*

Duplicates.—Cassiope, Io, Aglaia, Salmacis (4), Minima, T. rubi, Statices, Plantaginis, Sororcula, Cribrum (4), Saucia, Suffusa, Suspecta, Nigrocincta, Blandiata, Myrtilli, Nupta, Spartiata, Hastata, Polycommata, Carpinata, Moneta (4), Bertrami, Buoliana, Ericellus, Penziana. *Duplicates.*—Very many British or foreign.—*H. A. Beadle, Station Street, Keswick.*

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MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W. 8 p.m. —Meetings: October 21st; November 4th, 18th; December 2nd. Annual Meeting, January 20th, 1904.

The City of London Entomological and Natural History Society. — London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m. November 17th, "The Habits, Distribution and Variation of *Spilosoma fuliginosa*," by J. W. Tutt, F.E.S.; "The Larva, Pupa and Larval Habits of *Spilosoma fuliginosa*," by A. W. Bacot, F.E.S.

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m. Entrance Fee, 1s.; Annual Subscription, 1s.—Hon. Sec. G. E. Shaw, 45, Colworth Road, Leytonstone, N.E. Meetings: November 2nd, "The Story of Quinine and the Cinchona Trees," G. E. Shaw (Lantern). Excursions: November 1st, Slough, for Burnham Beeches; Paddington, 10 a.m.; return, 2s. 6d.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. Meetings: October 22nd, Report of the Field Meeting at Limpsfield, by R. Adkin, F.E.S.; Report of the Fungus Foray at St. Paul's Cray, by R. Adkin, F.E.S. November 12th, a Lantern Evening; will those intending to exhibit slides kindly send a post card to the Report Secretary.

North London Natural History Society, Sigdon Road Board School, Dalston Lane, N.E. (close to Hackney Downs Stations, G.E.R.).—Meetings second and fourth Tuesdays in each month, at 7.45 p.m.

Carlisle Natural History Society.—Meetings held at Tullie House, Carlisle, 7.45 p.m.-9.30 p.m. Papers: November 5th, 1903, "Insecta," by G. B. Routledge, F.E.S.

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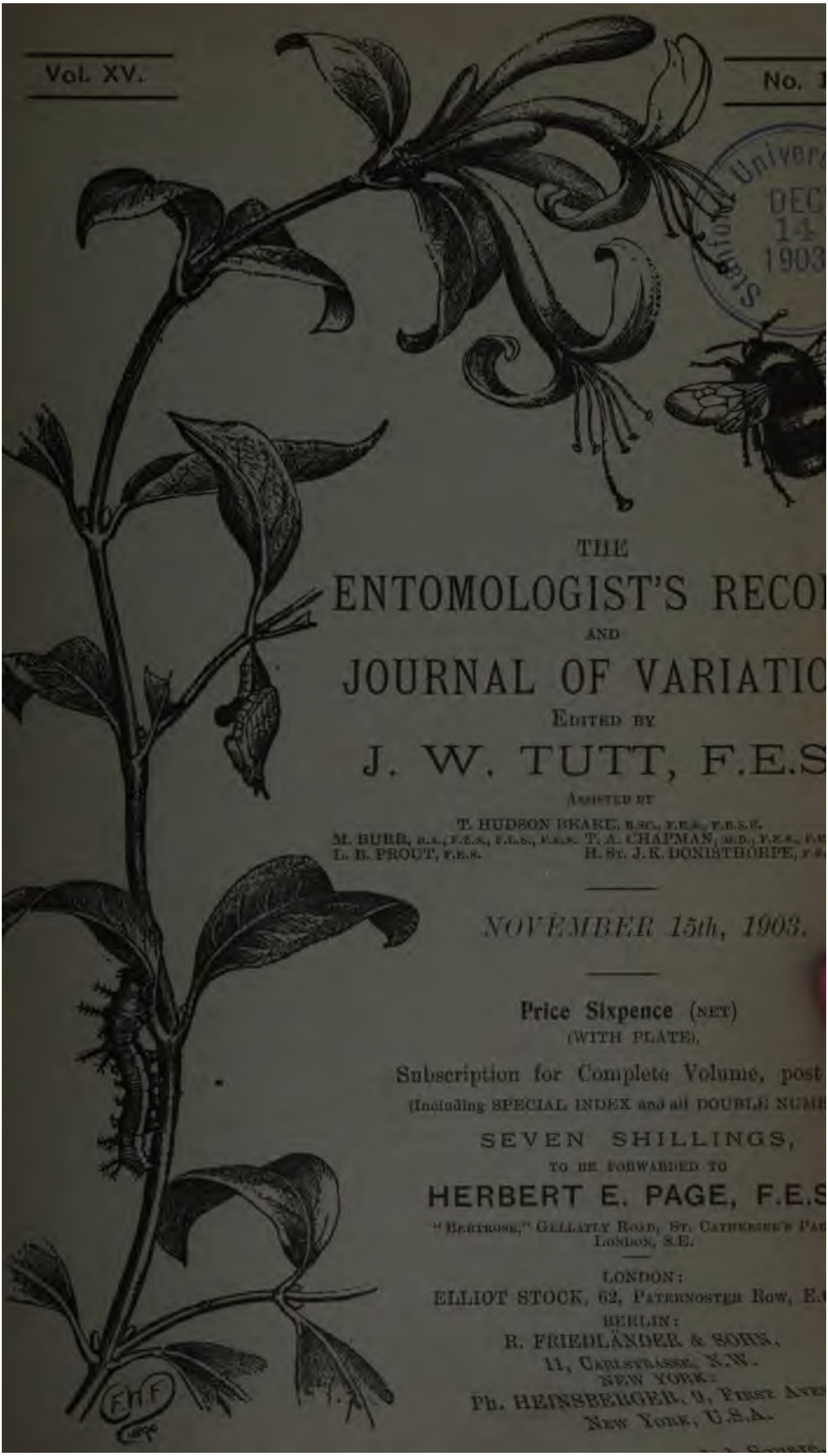

THE
ENTOMOLOGIST'S RECO
AND
JOURNAL OF VARIATIO

Edited by

J. W. TUTT, F.E.S

Assisted by

T. HUDSON BEARE, B.Sc., F.E.S., F.R.S.E.
M. BURR, B.A., F.Z.S., F.L.S., F.E.S. T. A. CHAPMAN, M.D., F.E.S.,
L. B. PROUT, F.E.S. H. St. J. K. DONISTHORPE,

NOVEMBER 15th, 1903.

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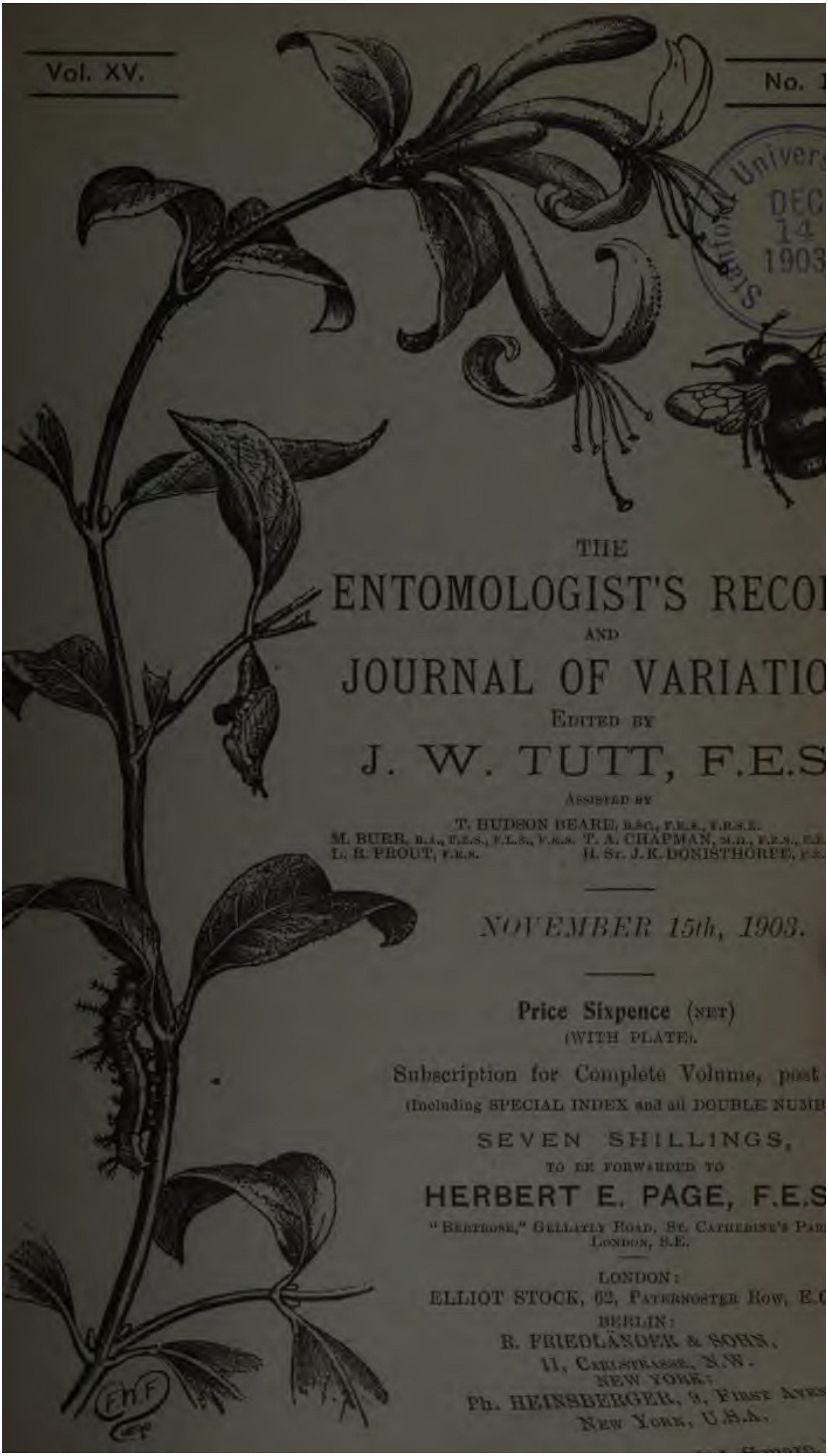

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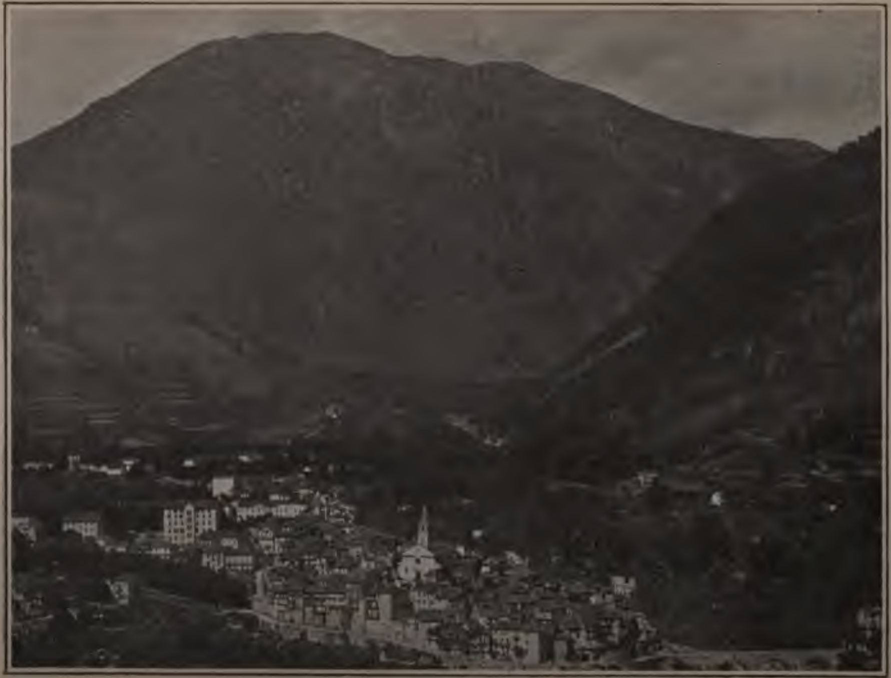

St. Martin Vésubie.

A Trip to Corsica and the Alpes Maritimes (*with plate*).

Part II.—St. Martin Vésubie and Digne.

By H. ROWLAND-BROWN, M.A., F.E.S.

A good many entomologists have visited the beautiful valley down which the Vésubie thunders through deep limestone gorges, or opens out into pleasant intermediate relief of green meadows and fruit-laden orchards. The French authors quote St. Martin Lantosque religiously for half the insects to be taken in southern France; Millière is cited, again and again, to show that the "hauteurs" above the village are the haunt of butterflies which I, for one, have found rare enough. But no English entomologist, as far as I can determine, has systematically worked from the level of the Nice-Puget-Théniers line to the Madone de Fenestre, a distance, perhaps, of five and twenty miles, embracing every sort and kind of scenery, from semitropical to high alpine, with a corresponding variety of fauna. A week or ten days, even in July, hardly offers sufficient opportunity to grasp the real significance of these different altitudes. The Vésubie season, however, lasts from April to October, and fortunate is the naturalist who remains there over the spring and summer months. After the rough hospitality of Corsica, the flesh-pots of this agreeable summer-dépendence of Nice, are by no means a disadvantage. The Hotel Regina, where I stayed, was not only reasonable in every way, but well found, clean, and electric-lighted, with a sympathetic proprietor, whose English wife, understanding our manners and customs, took heed for my British propensities accordingly. I say this advisedly, because I fear in some previous papers in this magazine I have, perhaps, not dwelt too intimately on certain drawbacks of inn accommodation where I have sojourned alone. Collectors have sometimes asked me how on earth I could recommend them such and such a place, but I have generally found that they went not unaccompanied, and that the difficulty has, in some measure, arisen from my failure to differentiate the quarters suitable to bachelors, and those more fortunate travellers than myself. On the strength of a bath, bought by myself, I ventured to advocate the attraction of a certain happy hunting-ground on the southern slope of the Alps, and made a special point of the home-comforts there attainable. Alas! the next of my countrymen to visit the spot, announced my bath like the helmet of the worn-out man-at-arms, a hive for bees or something worse, while it appears that lectures on hygiene, delivered to a polite landlord, anxious for British custom, had fallen on barren ground. May I sum up St. Martin Vésubie in four words "no smells, no bells," and the virtue of the latter recommendation will be understood by all who have stayed in early devotional alpine villages, or sighed in vain for sleep beside the bell-haunted, but otherwise delightful, shores of the Italian lakes. I find that the desire for a particular insect draws one, eventually, to a particular locality. This year it is Digne for *Erebia epistygne*, the next it is the Cevennes country for *Polyommatus dolus*; I believe it was *Nomiades melanops* which introduced me to Hyères, and it certainly was *Erebia glacialis* which sent me over the Stelvio to Trafoi and the Ortler region.

My friend, Dr. H. C. Lang, had mentioned *Laeosopis roboris* in connection with a visit paid by him to St. Martin Vésubie, and, remembering this, the best, if not the shortest, way home from Corsica, seemed to be *viâ* Nice and Puget-Théniers, the road which I traversed last autumn in all the late splendours of the fall. The railway-station is La Vésubie on the Chemin de fer du Sud. A char-à-bancs plies between it and intermediate villages, taking four leisurely hours and more to cover the twenty-one miles. This drive alone is worth a journey to the south in summer. The wind and river singing through the split precipitous chasms, keep the air cool on the hottest day, though there is quite as much dust on the road as makes for discomfort. However, that only means that the wayside halt, and the figs and the gold-green grape clusters, will be more desired and appreciated. You can get a hatful (large size Panama) of figs for thirty centimes, and enough grapes to do the "cure" in one day for the same small sum. On a hot outing this profusion is an inestimable boon, especially when collecting away from the valleys in the lower hills where water is not to be found with certainty. The actual height of St. Martin Vésubie is a little over 3000ft., or rather more than 1000ft. higher than Digne. Madone de Fenestre, with a by no means uncomfortable little hotel, reached by the upper valley of the Vésubie, is 6260ft. The valley of the Borreon, which joins the Vésubie at St. Martin, is for the most part, highly cultivated. By far the best hunting-ground is between the town and Venanson, a tiny village perched high on an escarpment of rock overlooking the whole valley. My first day at Vésubie was spent investigating this particular route right up to the pretty amphitheatre, into which another stream discharges itself from the higher levels. Here, on July 26th, I saw more butterflies on the wing than elsewhere on the whole of my expedition put together. On the moist places left by the runnels, now dry, *Melitaea phoebe* was in great abundance with *M. athalia*, while I noticed that *M. didyma* attained a size far superior to anything I have taken in the south of France or elsewhere. But quite the commonest species on the wing was *Satyrus actaea* var. *cordula*, the males very fine and large, predominating. *S. circe*, *S. semele* and *S. alcyone* were also abundant; but neither now, nor later, did I encounter, in these valleys, *S. briseis*, *S. statilinus*, *S. fidia*, or *S. arethusa*, all, according to Mr. Bromilow's list, occurring there more or less commonly. Probably I was too early in this late season for the three, and how curious a mixture of spring and summer forms I met with will be understood when I say that, with the autumn or second brood of *Pontia daplidice* and *Gonepteryx cleopatra*, I presently observed a perfect male *Euchloë* var. *euphenoides*, certainly the latest date I have ever found this single-brooded southern butterfly. Meanwhile, another exceedingly numerous insect was *Chrysophanus* var. *gordius*, also in superb condition, of both sexes, with a nice bright form of *C. dorilis*. On the stonecrop, flowering on the wayside walls, and also, wherever a stunted sloe-bush struggled for existence, *Thecla ilicis* var. *cerri* was to be found with a few ragged *Callophrys rubi*. The former flower also yielded a single male *Lampides telicanus*, the main brood of which, as I afterwards ascertained at Digne, flies later in August. Other Lycænids about included *Plebeius argus* (*aegon*), very small, *P. argyrognomon*, *Polyommatus baton* (practically over), *P. astrarche*, *P. icarus* (not remarkable in any way), *P. escheri*, *P. bellargus*, *P. corydon*, *P. hylas* and *P. meleager*, of which it is noticeable that the *only* females taken by me were the ab. steveni. P. meleager, indeed, was one of the commonest species met with, both here and on the Nice road, which otherwise did not yield much of a bag. Higher up again, and in the little meadows, watered by a careful system of irrigation, *P. damon* was just beginning to show with *Nomiades semiargus*, and *Cyaniris argiolus*, while I may as well mention here that a few battered female *Lycaena arion* were still ovipositing in the Vésubie valley on the other side. *Chrysophanus virgaureae* was also to be found in profusion, the females not easily to be distinguished on the wing from *C. dorilis* var. *subalpina*. Argynnids were not very much in evidence. A few wasted *Brenthis euphrosyne*, fresh *Issoria latonia*, *Argynnis niobe*, *A. adippe* ab. *cleodoxa* and *Dryas paphia*, appeared at intervals, the last-named being by far the commonest of its kind. *Melanargia* var. *procida*, on the other hand, swarmed, and, presently, in the pine-woods, I found *Erebia ligea* and *E. euryale*, both fine examples and in exquisite condition. *Coenonympha dorus* was another common species, and there were the usual confusing Hesperiids, among which *Hesperia carthami*, *H. sao*, and a very beautiful form of what appears to be *H. alveus* var. *fritillum*, were prominent. That day, at least, I saw nothing of the promised *Laeosopis roboris*, although I must have passed over the spot more than once, where I afterwards discovered it two days before my departure (July 29th), when I was, however, carrying, not a butterfly-net, but a heavy camera. So, in the afternoon, I returned to the clematis hedge from which I had flicked the tell-tale specimen, took two fair examples, and saw at least half-a-dozen others in about half-an-hour, but *L. roboris* was evidently on the wane, though from hearsay, and my own observations, I should say it occurred not infrequently here, the larvæ feeding on ash. My walk up to the Madone (July 28th), like so many similar expeditions this year in the south, was spoilt by the sky clouding over soon after ten o'clock; and there is surely nothing more irritating to a collector than the sudden and prolonged withdrawal of direct sunlight after a brilliant, cloudless, early morning. Dr. Lang had told me that, in 1899, he found *Chionobas aello* flying in the village itself, if the group of sheds belonging to the inn, and the little pilgrimage chapel of Our Lady can be dignified by the name. At an altitude of 6000ft., the valley, which is in Italian territory, is an ideal collecting-ground for alpine insects. In a brief interval of sunshine I took, or observed, *Colias phicomone*, *Parnassius apollo*, *Erebia gorge*, *E. stygne*, *E. goante* and what I take to be a bright and well-ocellated form of *E. epiphron* var. *cassiope*, *E. melampus*, and again a well-marked and rather large *E. tyndarus*, referable to var. *dromus*. The Melitæas were represented by *Melitaea parthenie* var. *varia*, and *Argynnis pales* was, I expect, common enough, though most I saw were sitting on flowers or the leaves of low-lying shrubs. *Aporia crataegi*, *Aglais urticae*, and, a little lower, *Brenthis amathusia* with *Epinephele lycaon* (males only), suggested a useful field of exploration, but the absence of sun made collecting extremely difficult. It was perhaps remarkable, however, that here, as elsewhere, the Anthrocerids appeared little affected by the dull grey light; and, though never occurring in such profusion as I have seen them in the Swiss alps, lower down, on the lavender, I took a few interesting species, including *Anthrocera* (*Zygaena*) *purpuralis* and ab. *polygalae*(?), *A. transalpina*, *A. hilaris* var. *ononidis*, *A. carniolica*, and one ab. *weileri* (?), A. *ephialtes* ab. *medusa* (one), and several forms apparently of A. *trifolii*, not yet distinguished. Additional to the above should be mentioned *Papilio podalirius*, *Pieris callidice* (Madone), *Leptidia sinapis*, *Colias edusa*, *C. hyale*, *Gonepteryx cleopatra*, *Chrysophanus hippothoë* var. *eurybia*, *C. phlaeas* (type) and var. *eleus*, *Lampides boeticus* (worn), *Limenitis camilla*, *Polygonia c-album*, *Pyrameis cardui*, *P. atalanta*, *Argynnis daphne* (practically over), *Pararge maera*, *P. megaera*, *Epinephele jurtina*, *E. tithonus*, *A. hyperanthus*, *Coenonympha pamphilus*, *Adopaea lineola*, *A. thaumas*, *A. actaeon*, *Augiades comma* ab. *catena*, *A. sylvanus* (very large females), *Carcharodus lavaterae* and *C. alceae*, all of which occurred commonly in the neighbourhood. But the butterflies enumerated by no means exhaust the long list of species native to the Vésubie district, and taken by other collectors in July, in more advanced, and prolific, years. Passing over from Puget-Théniers to Digne, after a night at Touet-de-Beuil, where I had noticed *Polygonia egea*, although the day was brilliant and hot, I was surprised to observe so few butterflies, or, indeed, insects of any order, Diptera excepted. Save *S.* var. *cordula*, I hardly saw anything at all. August 3rd found me on the old familiar Digne hunting-ground, above the Thermal establishment, where, in June, 1899, I had first encountered *Papilio alexanor*. Almost the first butterfly I saw was a fine female, but the few others about were worn and not worth capture. Most of the Lycænids, too, were more or less battered, but I took a single fair *Polyommatus admetus* var. *rippertii* from a number of "blues" thronging a patch of black mud. *Satyrus arethusa* also turned up singly, and *S. actaea* (type) was fairly abundant. On La Collete there was next to nothing, but *Papilio machaon* and *P. podalirius* with one or two more *S. arethusa*, and a sprinkling of *Brenthis dia*, while, in the woods just above the great fountain, *Zephyrus quercûs* was flying in some numbers. It was, however, much commoner on the rough ground at the top of the hill above the cemetery, where the withering plants of *Aristolochia* conjured up pleasant memories of many bygone expeditions on these now burnt-up slopes. With *Zephyrus quercûs* were one or two *Z. betulae*, both species much attracted by the pods of a shrub covered with honeydew. I had certainly hoped for a better result, but as I gather from M. Chrétien, a well-known Paris entomologist, whom I had the pleasure of meeting, the Digne season had been uniformly bad, owing, no doubt, to the weather earlier in the year. Then Mr. Sheldon has already given us his experiences of the "butterfly metropolis" in June-July, so there is no more to be said, save that I found the Boyer-Mistre, notwithstanding the pressure of a three days fête in progress, comfortable as ever, and Madame seriously considering the advisability of adding a golden *Alexanor* to the armorial "achievements" of her house. I forget precisely how many German collectors had been in the hotel this summer, but, good season or bad, it is clear that the famous capital of the Basses-Alpes still receives more attention from the bug-hunters of all nations that any other town in Europe. There must, however, be plenty of equally good, if less patronised, localities in this south-eastern corner of France, and had I taken *Erebia scipio*, as I meant to, but failed through the excessive heat, I should be inclined, if permitted the benefit of another expedition, to fix headquarters somewhat higher up, or at Annot, south of St André, an uncommonly promising locality, with a good hotel. But at least it was something gained by going so far south in July to have escaped the unbroken downpour, which, following the cold winds and frosts of the spring, will cause 1903 to be long remembered by British collectors at home and abroad in the north, as one of the worst on record.

Notes on the Lepidoptera of Brendon.

By LOUIS B. PROUT, F.E.S.

Having spent two very enjoyable holidays (July 13th to August 13th, 1901, and July 18th to August 21st, 1903) in the neighbourhood of Brendon, north Devon, in company with my friend Mr. J. E. Gardner, I have obtained a sufficient acquaintance with the lepidopterous fauna of that district to feel justified in contributing to the *Ent. Record* some notes on the subject. Unfortunately "sugar" was paying very poorly during both visits, and the very bad weather in the present summer hindered the carrying out of many plans which might have resulted in materially swelling our list. But still I think we may claim to have ascertained that the district is a mine of wealth to the diligent entomologist. The products of the immediate neighbourhood of the farmhouse which we made our headquarters (a mile or so from the village) were so interesting and varied, that I shall confine myself to these for the greater part, merely appending a list of a few of the principal species which we met with somewhat further afield.

Among the butterflies nothing very striking was observed, although to Londoners it was decidedly refreshing to have *Dryas paphia* flying about in the garden, *Zephyrus quercûs* in the wood a few yards from the house, and plenty of *Argynnis aglaia* and *Satyrus semele*, with a few belated *Callophrys rubi*, on the hillsides close by. Larvæ of *Vanessa io*—a species which is said to be getting scarcer in some parts of the country of late years—were very common on both our visits. One or two nice aberrations of *Epinephele tithonus*, with additional ocelli on the forewings, also deserve mention.

Sugaring, as I have already said, added very little to our "bag"; in fact, in 1903, hardly anything came at all excepting a few *Xylena monoglypha*, and a few *Mormo maura* down by the river Lyn. A very occasional *Craniophora ligustri*, on sugared ash-trunks, added just a spice of interest to what would otherwise have been an absolutely futile occupation. In 1901, we fared a little better, *M. maura* was then a pest in its particular locality, *Cosmia trapezina* was common and in endless varieties, *Triphaena fimbriata* and *Amathes brunnea* not uncommon, with an occasional *Thyatira batis*, *Habrosyne derasa*, *Amathes baia*, *A. dahlii*, *Pyrophila pyramidea*, *Cleoceris viminalis*, *Cerapteryx graminis*, *Pharetra rumicis*, etc. Of *Eurois prasina* (*herbida*) I only saw one, while many common species which might have been expected were almost or entirely absent.

But our most interesting Noctuid captures were made in other ways than at sugar. Of those which were found in the larval stage I will speak presently, but I may here mention that the local *Stilbia anomala* was in plenty on the suitable heaths, and that *Agrotis agathina*, *Amathes neglecta*, and, of course, *Lycophotia strigula*, were taken at heather bloom; two or three *Xylena scolopacina* occurred at flowers of bramble, while *Triphaena ianthina* was also true to its usual (though not quite invariable) habit of preferring flowers to treacle. Both the last mentioned species were once or twice beaten out of hedges by day. A few Plusias were netted at dusk, but only the commonest species—*Plusia chrysitis*, *P. pulchrina*, and the ubiquitous *P. gamma*. *Bomolocha fontis* was once or twice taken by day in the bilberry woods.

The "prominents" only furnished us with one record in the imago state, a single worn specimen of *Ptilodon capucina* (*camelina*) netted at dusk in 1901. The Lithosiids were also of the commonest, *Nudaria mundana* and *Lithosia lurideola*.

The Geometrids made up a very creditable list. The principal bilberry-feeders, *Eupithecia debiliata*, *Lygris populata*, *Malenydris didymata* and *Hydriomena furcata* (*sordidata*) were common in the wood; the last-named was, as usual, most interesting in its variation, probably the most prevalent characteristic of the race being a pale, but bright, green coloration, with an extension of the white outer spot into submarginal band. Down by the river, among hazel and sallow, larger and darker forms were prevalent, with quite a different range of variation. The said "bilberry wood" consists mainly of oak, with belts of larch, and a dense undergrowth of bilberry. Its other principal products in this superfamily were *Cymatophora repandata*, interesting pale aberrations, though we had not much luck with the lovely ab. *conversaria*, *C. ribeata* (*abietaria*), *Dryocoetis glabraria*, *Macaria liturata*, *Cidaria immanata*, *Leptomeris inornata*, *Eupithecia subfulvata*, one worn specimen, probably a stray from more open country. In the hedges at its margins we got *Euchlaena apiciaria*, *Triphosa dubitata*, and, of course, some of the usual pests. On the open moorland just above, chiefly on or near the stone walls, *Leptomeris marginepunctata*, *Anaitis plagiata* and *Epirrhoë galiata* occurred more or less freely; the latter did not vary much *inter se*, but were of a pretty, whitish form, with strongly darkened central band. Mr. A. U. Battley, who was there in 1902 earlier in the season, adds *Leptomeris fumata* and *Epirrhoë tristata*.

Light in the house was tried on suitable occasions, and brought in two or three *Terpne papilionaria*, *Pseudoterpna pruinata*, *Ochyria designata* (*propugnata*), a single *Eustroma silaceata*, and plenty of *Lygris populata*, also of Noctuids, several *Habrostola triplasia* in addition to some of the species already recorded as obtained in other ways. The only *Phalera bucephala* which we saw, also came in to our light, and, indeed, returned two or three times on being ejected.

On rocky or stony ground by the river, *Sciadion obscurata* was locally common, and *Amoebe olivata* by no means scarce. With the smaller fry we did very little, but I paid some heed to the interesting genus *Scoparia*, and was pleased to get a nice series of *S. ulmella* (*conspicualis*) in the wood, besides a few *S. crataegella*, etc. I believe *S. ulmella* has not hitherto been recorded from Devonshire; they were tapped off small oak-trunks by day, and came freely to Mr. Gardner's acetylene lamp at 11 p.m.

We were fairly successful with larvæ, although, on account of the constant rains, there were very few opportunities of tree-beating in 1903, and the bad weather also curtailed our expeditions, so that some —such as a hunt for larvæ of *Eupithecia constrictata* on the wild thyme—got crowded out altogether. Mr. Gervase F. Mathew tells me he remembers it as locally common in the county, and we found an apparently ideal locality for it not far from our lodgings. The

Eupithecia larvæ which we succeeded in finding in the immediate neighbourhood, were *E. castigata* (on various foodplants, as usual, ranging from ash to *Crepis*), *E. linariata*, *E. pulchellata*, *E. jasioneata* (much to our surprise, as we were a mile or two inland, and had understood it to be strictly confined to the actual coast), *E. nanata*, *E. fraxinata*, *E. lariciata*, and a single slender larva on *Crepis*, which may well be *E. scabiosata*, a species with whose larva neither of us is personally acquainted. Our object in searching *Crepis* was to get larvæ of *Hecatera serena*, and in this we succeeded, although they were far from abundant. In the common red campion we found *Perizoma affinitata*, and, of course, the ubiquitous *Dianthoecia bicruris* (*capsincola*), while the bladder campion yielded one or two *D. conspersa*. *Galeopsis tetrahit* did not seem common in the neighbourhood, but when found it yielded, as usual, the larvæ of *P. alchemillata*. From ash we obtained larvæ of *Craniophora ligustri*, and from alder those of *Notodonta dromedarius*, *Acronicta leporina*, *Hydriomena autumnalis* (*impluviata*), *Euchoeca obliterata* (*heparata*) and *Chloroclysta siterata* (*psittacata*), from beech, *Colocasia coryli*, from sallow *Notodonta ziczac*, from heather, *Anarta myrtilli* (both on *Calluna* and *Erica*), whilst *Odontopera bidentata* was in all kinds of trees, though decidedly commonest on ash and larch; some of the charming lichen-like varieties of the last-named larvæ were taken from the larch; the series of moths which I bred in the spring of 1902 showed an interesting range of variation.

Add to the foregoing notes the fact that, within a very few miles of us, the following (amongst other) species occurred, either as larvæ or imagines, and I think my opening assertion will be admitted—"that the district is a mine of wealth." The species referred to are—*Cucullia absinthii*, *Hypenodes costaestrigalis*, *Tephrosia bistortata*, *Asthena blomeri*, *Spilote* (*Abraxas*) *sylvata*, *Perizoma taeniata*, *Eupithecia plumbeolata*, *E. expallidata*, *E. trisignaria*, *E. tenuiata*, *Euphyia picata*, *Lygris prunata*, *Petrophora bipunctaria* (a fine dark form which I have seen from no other British locality), *Scoparia truncicolella*, *Ennychia cingulata*, *Phlyctaenia terrealis*, *P. asinalis*, *Leioptilus tephradactylus* and *L. osteodactylus*.

Notes on the eggs, larva, cocoon and female of Orgyia splendida.

By J. C. DOLLMAN, F.E.S.

Three full-fed larvæ of this species were received from Dr. Chapman on August 25th of this year, two of which appeared ready to spin up, while the third example had evidently suffered on the journey. It is a very handsome larva, about one inch in length, with the body beautifully variegated by lemon-yellow and black reticulated markings, and adorned with large reddish warts. The head is large and bold in character, and intensely black and shining. There is a black dorsal line on the body, fine on the thoracic segments, but expanding into diamond-shaped blotches on abdominal segments 5, 6, 7. The 1st, 2nd, 3rd, 4th and 8th abdominal segments carry a stiff, vertical, black tuft of hair with a white core, and segments 6 and 7 have, in the centre of the dorsal surface, a tall turret-shaped yellow excrescence of a fleshy consistency, which is repeated in an embryo form on segment 5. On the prothoracic segment is a transverse band of six dull yellow warts, and a similar band of six, larger, orange-coloured warts across the meso- and metathoracic segments. The fine black dorsal line on these segments runs through the centre of these transverse bands of warts, slightly dividing them in the middle, and showing three warts on each side of the line on each segment. The bottom wart is continued horizontally along the larva on each segment, forming a subdorsal line of orange-coloured warts to the 8th abdominal segment. On abdominal segments 5, 6 and 7 above this wart, is another orange wart, placed between it and the turret-like protuberance. At the skinfolds, between the thoracic segments, there is a transverse series of fine, elongated, yellow, dorsal markings, making two light bars across the larva there. The lateral surface is ornamented with reptile-like markings of lemon-yellow, with jet black network of dividing lines. On each segment, below the subdorsal warts, are placed two others, of a dull horn colour, forming two lines horizontally along the larva, a lateral and a spiracular one. All these warts, on every part of the segments, carry stiff black hairs, rather longer than the tufts before mentioned. The spiracles are concealed in the multiplicity of the black and yellow markings. The head, like the body, is very hairy, and has the growth of hair set well forward, projecting from the face.

Two of these three larvæ spun their cocoons on August 26th, the third one died. The cocoon is of a greyish-black colour, formed to a great extent from the hairs of the larva, is oval in shape, and semitransparent. In the present instance the spinning was accomplished in the corners of the box in which the larvæ were kept.

On September 15th, a healthy female insect emerged from one of the pupæ, and was found to be a stout shuttle-shaped bag-like creature about $\frac{5}{8}$in. long. It was covered with closely-grown, thick, woolly hair, rather short in length, and of a tow-like colour. The segmental divisions were cut deeply into the woolly coating, and the insect presented the same appearance all round, the ventral surface only being determined by locating the legs on the closely contracted thoracic segments. The head, anal termination, and legs, were dark brown and very shiny. On the 19th, the other cocoon was opened to find another female insect, but, in this case, full emergence from the fragile pupa-case did not take place. The head and ovipositor were simply thrust through the thin confining skin, and the insect soon commenced, as the first one had done, to lay infertile ova.

The egg is very large for the size of the insect, fully $\frac{1}{16}$in. in diameter, is laid without attachment to any object, and rolls loosely about, the egg-laying habit of this species being quite unlike that of the two British species we have in this genus. It is a beautifully smooth egg, white in colour, but showing the glow of the yellow contents through the shell, strongly resembling the appearance of many freshly-laid white eggs of birds. The effect of it is like white porcelain. It is slightly oval in shape with a rather flattened crown, in the centre of which is a small depression.

ORTHOPTERA.

ORTHOPTERA AT CAUX.—Caux is a village, or rather, two large hotels, *on the hills* at the back of Glion, above Montreux. It is a most *beautiful spot*, commanding a splendid view of the Lake of Geneva, of the Savoy Alps, and the Dent du Midi, with the valley of the Rhone. During a fortnight's stay there, in September, 1902, I picked up a few Orthoptera, which are, perhaps, worth noting, although I discovered nothing of very great interest. *Chrysochraon brachypterus*, Ocsk., was common enough among the thickets on the footpath from Caux to Les Avants; when alive, it is of a brilliant golden-green, but fades to a dirty green-brown after death. *Stenobothrus lineatus*, Panz., occurs on the grassy slopes at the back of Caux. *Omocestus viridulus*, L., was common on the grassy places around Caux. *Stauroderus morio*, Fabr., is found on the mountains round the Dent de Jaman and on the sides of the Rochers de Naye, between 5000ft. to 6000ft. *S. apricarius*, L., I took sparingly on the sides of the Rochers de Naye. *S. bicolor*, Charp., was of course common, as also *Chorthippus parallelus*, Zett. *Gomphocerus sibiricus*, L., was common on the Rochers de Naye, above 5000ft. *Podisma alpinum*, Koll., occurred on the path to Les Avants from Caux, among the thickets, and *P. pedestre*, L., I took on the Rochers de Naye. *Orphania denticauda*, Charp., was common in long grass by the sides of paths on the Rochers de Naye; I never took it lower than the Dent de Jaman. *Locusta cantans*, Fuessly, made the air shrill with its stridulation in the hotel gardens. *Olynthoscelis cinereus*, L., occurred in thickets along the path from Caux to Les Avants. *Platycleis aussureana*, Frey, was numerous on the mountains round the Dent de Jaman and on the Rochers de Naye.—MALCOLM BURR, F.E.S., 12, Fitzjames Avenue, West Kensington. *October 10th*, 1903.

COLEOPTERA.

COLEOPTERA IN SCOTLAND.—Since August I have only been able to collect at irregular intervals, and the weather has been so persistently wet and stormy that the scanty leisure I have had for field work has been seriously reduced, still I have managed to turn up a few good things, and to add, I believe, some new records for Scotland. In my last notes I omitted to mention the capture, near Longniddry, in numbers, off *Solanum dulcamara*, of *Psylliodes affinis*, Pk.; Canon Fowler says it had not been taken in Scotland, though Bold records it as common in Northumberland; the plants were growing right on the shore, and must often have been drenched with sea spray. The first half of September (except for a visit to Southport) was spent at Bridge of Cally, in Perthshire, just at the entrance to Glen Shee, which leads up to the only pass with a carriage road to Braemar from the south. The most interesting captures were single specimens of *Aphodius nemoralis*, Er., *A. foetidus*, F., and *A. conspurcatus*, L., all taken flying on the road during the only two fine autumn days we were blessed with. *Amara acuminata*, Pk., and *Pterostichus versicolor*, Sturm., were also secured in the same way, while *Cychramus fungicola*, Heer, was one of the few insects taken in the sweep-net worth recording. On Saturday, September 26th, another of those rare autumn days, in which mere existence was a pleasure, and the open air was so delightful that one sighed for the power to bid Old Time stay his flying feet, we were again at Longniddry; on this occasion *Ceuthorhynchidius versicolor*, Bris, previously only taken by odd specimens, was almost common; *Atomaria nigriventris*, Steph., was swept up, and also one large dark *Atomaria*, which appears to be *gibbula*, Er., but I have not yet had a chance of comparing it with an authentically named specimen. During the present month I have taken *Triphyllus suturalis*, F., out of fungus on a tree-stump in Duddingston Park; the only previous Scotch record is "Tweed district only very rare"; I expect I could have obtained it in some plenty, but only took a small series, not recognising it at the time, and then we had such torrents of rain that the fungus was washed away. Out of the same fungus came *Homalium excavatum*, Steph., *Cilea silphoides*, L., and *Proteinus ovalis*, Steph., which seems to be a rather scarce insect in Scotland. Out of flood-refuse thrown up by the Tweed near Cardrona Station, I have today taken *Bembidium schüppeli*, Dj., in scanty numbers, *B. mannerheimi*, Sahl., *Ocalea latipennis*, Shp., *Paramecosoma melanocephalum*, Hbst., *Stenus picipes*, Steph., *S. crassus*, Steph. and *Catops sericeus*, Pz.—T. Hudson Beare, B.Sc., F.E.S., 10, Regent Terrace, Edinburgh. *October 17th*, 1903.

Hypocoprus latridioides in the Hastings district.—In August, 1901, when searching for *Heptaulacus sus*, on the Camber Sands, I found a little beetle under sheep's dung, which I ultimately identified as the species mentioned above. In August, 1902, Mr. E. A. Butler took several specimens (five, I think) in the same locality under a dead chicken. This species seems to be so very seldom taken that its occurrence two years in succession leads one to hope that it is fairly established.—W. H. Bennett, F.E.S., 15, Wellington Place, Hastings.

Coleoptera at Bettws-y-coed and vicinity in July and August.—During a holiday of some week's duration at the above charming locality, I did my best to collect the coleoptera of the district. In common with other collectors I have found insects very scarce this season, and, although the country hereabout is well wooded, and herbage and flowers abundant, it is worthy of remark that not a single longicorn was seen, nor even a weevil, except the very commonest species. The most productive form of collecting was by a minute scrutiny of the fine shingle (comminuted slate ?) on the banks of the Llugwy, especially at its confluence with the river Conway. This locality is erroneously stated to be at "Conway," in Canon Fowler's *British Coleoptera* (vol. i., p. 124). Working this shingle is very tedious, but yielded one *Perileptus areolatus* (two other specimens were seen, but took instantly to the wing). *Bembidium decorum*, *B. atrocoeruleum*, *B. punctulatum*, *Homalota fragilis*, *H. cambrica* (the latter almost all males), *Ocalea castanea*, and the tiny Hemipteron *Cryptostemma alienum*, and *Salda scotica*. All these were found in the wetter part of the shingle. Higher up the bank occurred *Cryptohypnus dermestoides* and its var. in some numbers with *Amara aulica*. The moss in a stream from a waterfall near Gwydir Castle produced *Lesteva pubescens* in some numbers, *L. punctata*, Er. = *muscorum*, Duv. (one), *L. bicolor*, *Ocalea castanea*, *Trogophloeus arcuatus*, *Ancyrophorus aureus*, *Mycetoporus splendidus*, *Homalota currax*, *Platambus maculatus* and *Hydraena gracilis*. A dead bird close by produced *Silpha thoracica*, *Necrophorus mortuorum*, *Homalota divisa* and *Choleva fumata*. Sweeping was not productive, *Chrysomela varians* and *didymata* occurred on *Hypericum*, *Brachypterus gravidus* on *Linaria*, and single specimens of *Abdera bifasciata* and *Trogophloeus fuliginosus* by sweeping in a recently mown meadow. In the elevated woods near Gwydir the following occurred under stones, *Quedius lateralis*, *Philonthus decorus*, *Calathus* *piceus*, *Taphria nivalis*, *Ocypus brunnipes*, *Cychrus rostratus* and *Carabus catenulatus*. *Hydrocyphon deflexicollis* was abundant on alders near Crafnant Lake, and, by working the moss on boulders in a stream from Dolgarog waterfall, *Hydroporus rivalis* and *H. lituratus*, as well as *Hydraena gracilis*, were obtained, a single specimen of *Gnypeta coerulea* being swept close by. I have been induced to insert many common species in the above list since the coleoptera of North Wales are by no means well-known.—E. A. Newbery, 12, Churchill Road, N.W. *October 28th*, 1903.

Scymnus limonii, n.sp.—A Species New to Science.

By H. ST. J. K. DONISTHORPE, F.Z.S., F.L.S., F.E.S.

On August 15th last, whilst collecting in a salt-marsh at Yarmouth, in the Isle of Wight, I swept from *Statice limonium* a four-spotted *Scymnus* which was unknown to me. Mr. Malcolm Burr, who was with me, found another specimen at the roots of the sea-lavender, with the spots confluent. As there was nothing like it at the British Museum, I sent both specimens to Herr Weise, who returned them to me as unknown to him. I exhibited them at the meeting of the Entomological Society on October 7th, as a new species. Mr. Champion told me he had specimens like them, and he has kindly lent me a nice series which he took in the Isle of Sheppey, and which were in his collection among his series of *S. mulsanti*, Waterhouse. It is noteworthy that he took his specimens also in a salt-marsh, whilst looking for *Apion limonii* at the roots of sea-lavender. This suggests the specific name of *limonii*. It comes nearest to *mulsanti*, Wat., and *redtenbacheri*, Muls.

From the former it differs in having the post-coxal foveæ with raised sides incomplete, very nearly as in *redtenbacheri*, whereas in *mulsanti* they form a more or less complete semicircle round the posterior coxæ, in the colour of the femora, which are always dark, the legs being entirely testaceous in that species, and in the abdomen being entirely black, instead of red at the apex, moreover, the punctuation of the elytra is much stronger.

From the latter it differs in being considerably larger, more convex and more rounded at the sides, and in having the punctuation of the elytra stronger; also, even where the spots are confluent, they do not form a band, but are always bent inwards, in the middle, whereas, in *redtenbacheri*, the bands on the elytra are simple. As regards colour it is a very variable species, ranging from quite black, as in one of Mr. Champion's specimens, to black with four yellow spots, or, in some specimens, as we have seen, with the spots confluent; the femora are always dark and in some cases quite black, in one of mine from the Isle of Wight they are jet black. The following is a short description of the species.

S. limonii, n.sp.—Broad oval, convex, black with white pubescence; antennæ and palpi testaceous; head with labrum, black; thorax black with base narrower than base of elytra, giving the appearance of a shoulder to the latter; elytra black, or black with four yellow spots, the posterior pair being always the larger, or with the spots confluent, coarsely punctured, the punctures consisting of larger and smaller punctures mixed together in about equal proportions; underside entirely black, the post-coxal foveæ with raised side incomplete; femora dark or quite black; tibiæ and tarsi testaceous. L. 1½mm.-1¾mm.

This species must be one of the ground-feeders, which prey on the aphides on the roots of sea-lavender or other salt-marsh plants.

Tetropium castaneum, L.—A species of Longicorn Coleoptera new to Britain.

By FRANK BOUSKELL, F.E.S., F.R.H.S.

On June 15th last, I was collecting coleoptera in a wood in the Market Bosworth district of Leicestershire, with the Rev. A. R. Birkenhead, and discovered a fir-tree badly infested by longicorn larvæ almost up to the top. After some work at the bark, larvæ were found in various stages, also three pupæ and two imagines of a longicorn new to me, which proved, on examination at the British Museum, to be *Tetropium castaneum*, L. Unfortunately, during my absence in Ireland on an entomological trip, the pupæ all hatched out crippled imagines. The colony has every appearance of having been established for many years, and the plantation would date back about 200 years. It is miles away from any timber which I can trace as being imported, and it is in the heart of a purely agricultural district where local timber is used. Through its attacking the trees at such a height it may possibly have been overlooked.

The synonymy of the species is as follows :—Genus: *Tetropium*, Kirby (*Criomorphus*, Mulsant). Species: *Castaneum*, L., Fn. Sc., 192. *Luridum*, L., L. T. 74. Mulsant describes it as follows :—" Dessous du corps, tête et prothorax noir; celui-ci pointellé; en général peu profondément canaliculé. Ecusson canaliculé. Elytrés deux fois et demie environ aussi longues qu'elles sont larges prisés ensemble; chargées de deux faibles lignes longitudinales élevées."

The elytra are either black or ferruginous. It can be distinguished from the allied species *T. fuscum*, Fabr., of which a single specimen was taken by Dr. Sharp on June 24th last, in the New Forest (*Ent. Mo. Mag.*, August, 1903, p. 198), by the disc of the thorax being much smoother and more shining. The British Museum specimens of *T. fuscum* also have a greyish patch at the base of the elytra, which does not occur in their reddish specimens of *T. castaneum*. Mulsant does not recognise *T. fuscum* as a species, but treats it as a variety of *T. castaneum*, and, certainly, except for the punctuation of the thorax, there would appear to be no distinction. Unfortunately all my specimens were black. Both species feed under the bark of pines and firs according to Mulsant. The question as to whether *T. fuscum* is a variety or not, is, therefore, by no means free from doubt. *T. castaneum* is found in the Alps and other mountains of Eastern and Central Europe, and has been recorded from France, Germany, Switzerland and Austria.

NOTES ON COLLECTING, Etc.

Note on a Habit of Male Fidonia brunneata.—On the afternoon of August 12th, 1903, whilst walking down from Arolla to Evolène, in the pinewood between Satarme and Haudères, the males of *Fidonia brunneata* were somewhat common, but rather worn. They were observed in some numbers sitting on the mules' dung in the roadway, sometimes as many as three being quite close together within the space of two or three square inches. It is a habit well known in many butterflies, but quite new to me, at any rate, in *Fidonia brunneata*.—J. W. Tutt.

Note on a Habit of Male Porthetria dispar.—There was a tremendously heavy fall of rain in the Val d'Hérens on the night of August 12th, and the morning of the 13th was very dull, and remained so until after noon. Between noon and 2 p.m., whilst walking between Useigne and Vex, the males of *Porthetria dispar* were in great numbers, flying rapidly with their well-known zigzag flight over the roadway, and repeatedly resting on the damp ground with examples of *Melitaea didyma*, *Epinephele lycaon* and *Polyommatus icarus*, which were abundant there. I may add that the last-named species, which, in Switzerland, has never been, in my experience, a "common" blue, was here exceptionally abundant, the greater number of specimens of both sexes being of the ab. *icarinus*, without the basal spots to the forewings.—IBID.

ABUNDANCE OF ANTICLEA BERBERATA.—I have often noticed *Anticlea berberata* in fair numbers in the Alps, but quite an exceptional number was seen on the morning of August 13th, near Useigne, on the rough-hewn rocks by the roadside, where some dozens were observed in a very limited area, almost every rough crack affording a hiding-place for one or more examples. A few well-grown barberry bushes grew at the top of the steep slopes on the other side of the road. None of the rocks passed during the remainder of the journey seemed to have more than an occasional odd example of the species on them. —IBID.

INSECTS AT LIGHT AT CHAMONIX.—For a week Mont Blanc was in tears; from the evening of August 14th until that of August 20th rain was the order of the day—rain, accompanied by cold, until the 18th, when the weather changed to a fine warm afternoon, overcast evening, and warm, drenching rain all night and next day. On the evening of the 18th, moths were common at the electric light in the garden of the Hôtel Mer-de-Glace at Chamonix, mostly out of reach, but many odd specimens of a variety of species came within reach of the net, and were duly captured. None were rare, and only deserve to be chronicled as possibly being of service some day to the future compiler of a distribution list of our Savoy species. Those captured included a fine ♀ *Œnistis quadra*, ♂ *Lymantria monacha*, ♀ *Arctomyscis* var. *myricae*, both sexes of *Xylophasia lateritia*, *X. polyodon*, a large number of *Apamea oculea* (almost as variable as in England), two ♂ *Luperina cespitis* in fine condition, *Drepana falcataria* ♀, *Boarmia repandata*, in numbers, but mostly worn, *Ellopia prosapiaria* var. *prasinaria* (several appeared in the early part of the evening, but only three ♀s and no ♂s were captured), *Coremia ferrugata* (three ♀s, worn), *Gnophos dilucidaria* (only ♂s), *Strenia clathrata* (one ♂ only), *Acidalia incanata* (a ♀), *A. bisetata* (a ♂), *Anticlea berberata* (both sexes, worn), *Thera obeliscata* (one ♀), *Larentia didymata* (♀s and ♂s, the latter worn), *Cidaria immanata* (one ♀), *Acidalia inornata*, a ♂, *Botys terrealis*, many *Crambus culmellus*, etc. Many other insects were not caught. An Arctiid, that may have been *Arctia caia*, several Noctuids that may have been *Plusia festucae*, and may not have been that species, but that looked quite ruddy in the light, and at least one Sphingid species, were among the number that remained uncaught and, therefore, undetermined. One species of Trichoptera was exceedingly numerous.—J. W. TUTT.

ASSEMBLING OF TINEA CLOACELLA, HW.—On May 27th, 1903, I noticed a swarm of small moths flying and crawling on the underside of a tread of some wooden steps here. Closer inspection revealed a large number, considerably over a hundred, of *Tinea cloacella* moving about in the greatest excitement around a crippled ♀, hanging from a pupa-case from which she had in all probability lately emerged. Most of the ♂ s were flying around like a swarm of *Adela viridella*, but the bolder ones were running rapidly over the wood with their wings held over the back like a butterfly. From the position of the ♀, or from some other cause, there must have been a difficulty in approaching her, as none of the males made any actual attempt to reach her. I have frequently found several specimens of this beautiful species in close proximity, but have never before witnessed such a comparatively vast assemblage.—Alfred Sich, F.E.S., Corney House, Chiswick, W. *September 30th*, 1903.

Coleophorids of the London district.—Fired by Mr. H. J. Turner's excellent paper (*Ent. Rec.*, vol. xv., p. 88), I have made a few notes on the Coleophorids of this part of the London district. On April 28th I was delighted to discover several larvæ of *Coleophora albitarsella* here feeding on *Glechoma hederacea*, which is, I believe, their favourite foodplant. As is usual with this species, the larvæ were hidden away on the lower leaves of the plant, down among the stinging-nettles. On May 2nd I saw one larval case of *C. lineolea*, the only one I have come across this season; no doubt it has been fairly numerous, but my best locality for it here has been partially destroyed. Four days later I visited a hawthorn famous for *C. nigricella*. There were several larvæ in their just freshly-made spring cases; the small winter cases were still attached to the leaves, where, by the way, under favourable conditions, they will remain as long as the leaves hang on the tree. On the same day, also on hawthorn, several winter cases of *C. hemerobiella* were seen, but these were left till May 15th, when they were just forming their spring cases. They are usually a fortnight later than *C. nigricella* in carrying out this operation. On May 20th the imagines of *C. murinipennella* were softly flying among the herbage in a meadow at dusk. On June 1st, at Wimbledon, Coleophorid life was fairly abundant. The larvæ of *C. fuscedinella* were feeding in plenty on birch, mostly in their fresh cases. On the same tree, those of *C. ibipennella* (as we call it in England) were less common, and *C. bicolorella* rather scarce. On oak, the larvæ of *C. lutipennella* could be found feeding in their new cases. On June 7th, at Chiswick, I took larvæ of *C. badiipennella* off elm in company with *C. limosipennella*. Of this latter species I took a fair number later, but they all subsequently produced chalcids. Early in the year, several larvæ of *C. gryphipennella* were blotching a rose in the garden, but after the great storm of May 30th they disappeared; however, on August 13th, I found a small case, the first of the new generation. These are the only species of this genus I have met with here this season, but, in 1901, the following additional species were observed:—*C. juncicolella*, at Barnes and Wimbledon; *C. laricella*, abundantly at Richmond and Kew; *C. solitariella*, at Ealing and Wimbledon; *C. viminetella*, on sallow at Barnes and Wimbledon, and on narrow-leaved willow (*Salix viminalis ?*) at Chiswick; *C. paripennella*, on rose at Chiswick, and on sloe at Ealing; *C. spissicornis (fabriciella)*, one imago, at light, Chiswick; *C. genistae*, at Barnes; *C. saturatella*, at Barnes and Kew; C. albicosta, a few imagines at

Wimbledon; *C. anatipennella*, plentifully on sloe and hawthorn, at Ealing, and one on sallow at Barnes; *C. caespititiella*, on rushes, at Wimbledon, Barnes, and Richmond; *C. argentula*, on yarrow, at Chiswick and Barnes; and lastly, *C. laripennella*, at Chiswick, in 1902, in both imaginal and larval states. I feel sure that these 25 species do not include all that occur in the district. *Coleophora olivaceella* and *siccifoliella*, besides others, are surely inhabitants.—Ibid.

Abundance of Gracilaria syringella.—One of the features of this season just round here is the unusual abundance of *Gracilaria syringella* in the larval state. Earlier in the year the imagines were exceptionally numerous, and the larvæ of the first brood quite disfigured the lilac bushes. The second brood appears still more numerous, and has attacked the privet hedges, in the same manner as the lilacs, where these have not been closely cut. Even the ash-trees have not escaped their ravages. The greater proportion of the larvæ appear to content themselves with mining the leaves. It is only here and there that a rolled leaf is visible.—Ibid. [The larvæ of both broods were equally abundant both on lilac and privet, in the south-east district of London.—Ed.]

A visit to Selborne.—My friend, Rev. C. O. S. Hatton, having temporary charge of the parish of Shalden, near Alton (Hants), kindly asked me to stay a couple of days with him so that we might avail ourselves of the opportunity of visiting the neighbouring parish of Selborne. Accordingly I reached Shalden on Tuesday night, September 23rd, and on the following morning we started on foot for Alton, three miles. On our way we captured two *Pyrameis cardui* in very fair condition, regaling themselves on flowers of *Centaurea scabiosa*. On arriving at Alton, we hired a conveyance, which took us four miles along a rather flat uninteresting road to Selborne, which we reached at 11.30 a.m. A very worn specimen of *Pieris rapae*, and a similar representative of *P. brassicae* (the latter flying weakly across the Plestor) were the only imagines seen in the village itself. We next visited the church, inside which is a mural tablet in memory of Gilbert White, the world-renowned author of *The Natural History of Selborne*, who was born in that village in 1720. There also he died in 1793, having lived there the greater part of his life, although he was never vicar of the parish. At his own desire, no monument was erected to him in the churchyard, and nought but a tiny headstone, with the initials G.W. and the date of his death, marks the resting-place of this most accurate observer and recorder of beasts, birds and insects. Before leaving the churchyard we measured accurately (at a distance of 5ft. from the ground) the magnificent yew-tree which it contains, and found the girth to be 25ft. 6in. Gilbert White mentions this tree in his *Antiquities of Selborne*, where he says—"It seems to have seen several centuries, and is probably coeval with the church, and, therefore, may be deemed an antiquity. The body is short, squat and thick, and measures 23ft. in girth, supporting a head of suitable extent to its bulk. This is a male tree, which, in the spring, sheds clouds of dust, and fills the atmosphere around with farina." Departing from the church we noticed signs of insect ravages on some nasturtium plants in the village, and on examination we found the culprits to be a single larva of *P. rapae*, and at least a hundred of *P. brassicae*, of these latter we each took about fifty, more with the idea of keeping the resulting butterflies as mementoes of our pilgrimage, than with the hope of breeding an aberrant form to which we might assign the name "selborniae." We next proceeded to climb "The Hanger," which is a steep, well-wooded, chalky slope, rising 300ft. above the village. This we ascended by the very zigzag path constructed in the time of the great naturalist. On our way up we noticed several very interesting plants, but no insects whatever. At the top is an extensive plateau covered with gorse, blackthorn, oak and stately beech, while here and there are graceful festoons of the wild clematis. Our first entomological efforts were directed to this creeper, but resulted only in some small larvæ of *Geometra vernaria*. *Pyrameis atalanta*, a single specimen sailing round the topmost branches, baffled all our efforts to imprison him. Next we attacked the beech trees, from which we soon succeeded in obtaining larvæ of *Zonosoma linearia*, but in no considerable numbers. Other beech-frequenting larvæ here were *Hylophila prasinana* and *Metrocampa margaritata*, the latter very small, but extremely lively. This we also found on blackthorn, together with a single *Eupithecia exiguata*. Among the beeches we observed two imagines of *Cidaria immanata*, one of which I caught. How anyone can confuse this species with its near ally *C. russata*, is to me incomprehensible, the line traversing the centre of the hindwing being blunt in *russata*, whereas in *immanata* it is distinctly angulated. Just before descending from the plateau (where *Campanula glomerata* grows in abundance), we found a single larva each of *Cosmotriche potatoria* and *Euchelia jacobaeae*, and at the bottom of the Hanger we netted a couple of *Plusia gamma*, doubtless immigrants. Owing to the absence of the sun we noticed no *Pyrameis cardui* at Selborne, and for the same reason, doubtless, other day-flying species were not visible. The village itself is extremely picturesque, and its environs would delight the heart of any true lover of nature, such as its famed historian was beyond the shadow of a doubt.—(Rev.) Gilbert H. Raynor, M.A., Hazeleigh Rectory, Maldon, Essex. *September 28th*, 1903.

Pyrameis cardui in Essex.—It may be worth recording that I have seen *Pyrameis cardui* at Leyton, and also one example on September 30th at East Ham, where it was flying along the Barking Road. Of those at Leyton one was seen in my own garden, one in a neighbour's garden, and one flying along the high road on September 30th and October 1st, and have seen more since. I do not think they bred here, for there are no thistles.—C. P. Pickett, F.E.S., 99, Dawlish Road, Leyton, S.W. *October 4th*, 1903.

Pyrameis cardui at Chichester.—This butterfly made its appearance here, as in other parts of the country, towards the end of September, the first I noted being on the 24th of that month, a sultry day with dense fog in the early morning, clearing afterwards. In company with *Pyrameis atalanta*, several were seen flying in the garden, a species of *Sedum* proving a great attraction.—Joseph Anderson, Alre Villa, Chichester. *October 8th*, 1903.

Pyrameis cardui at Bedford Park.—It may be interesting to note that I saw *Pyrameis cardui* flying strongly over the rough growth in a waste field adjoining Bedford Park the last week of September, *apparently* quite unbroken though a little faded.—J. C. Dollman, *F.E.S.*, Hove House, Newton Grove, Bedford Park, W.

Abundance of Pyrameis cardui.—On September 22nd I cycled from Lyndhurst Road Station, across the New Forest, to Fritham Down, and was much struck by the number of *Pyrameis cardui* flying about and sunning themselves, together with a swarm of *Plusia gamma*. On the next day I went out to Burley, New Forest, where Mr. Smallpiece informed me he had found them equally plentiful, and on the 24th, at Brockenhurst, Mr. Lyle said that various collectors there had been taking large numbers. On the same day I got a letter from Mr. Harwood, of Colchester, saying that it was quite plentiful there. On September 25th I returned home, and my wife informed me that they had been quite common in our garden at the flowers, and on the same evening some friends came over from Nunhead, in great excitement, with two specimens of the same species, which they had managed to secure in their garden, where the insect was also numerous. On the 26th, I saw specimens flying in the streets at Greenwich, in the morning, and in the afternoon I paid a visit to Dulwich Park, where I found them extremely abundant. They were everywhere, sunning themselves in the road, and on clumps of a pink flower I counted as many as six at once. I only saw one *P. atalanta*, and this was in good condition. It being late in the afternoon, I sat down on a seat to watch them, and was presently rewarded by seeing them one by one fly up to roost in a small laburnum tree. I marked one or two down, and found that they generally roosted upside down, on the underside of a leaf, with the antennæ slightly expanded. On October 1st I again saw a number of the above insects near Poole, Dorset. I should mention that all the above insects were more or less worn, and that the winds for a fortnight preceding had been east and southeast, after months of west, southwest and northwest winds.—C. W. Colthrup, 127, Barry Road, East Dulwich, S.E. *October 14th*, 1903.

Influx of Pyrameis cardui.—I have been much struck at the sudden appearance of *Pyrameis cardui* in various localities in and near London. They were first seen about September 20th, and have continued till October 15th, in some places occurring in abundance. This has led me to search the thistles in many localities, but not a sign of larvæ or pupæ or traces of where feeding larvæ had been at work could be found. A special visit to Ilford (where it appeared in abundance) in search of larvæ or pupæ proved equally fruitless, and I at once came to the conclusion that they had not bred there. Visits were also paid to East Ham, Hackney Marshes, Leyton Marshes, Tottenham Marshes (in Essex), Raynes Park (Surrey), and other localities near London where *P. cardui* was seen, but not a trace could I find where larvæ had been feeding. Whilst on my holidays in August at Dover and Folkestone, only a few larvæ were taken—at Dover, eight; at Folkstone, three. Almost all thistles seen were thoroughly searched, so that this abundance cannot be put down to the larvæ being common on the south coast. *Pyrameis atalanta* larvæ, on the other hand, were common, but not a larva of *Aglais urticae* was seen, and only one imago of the latter species was observed on the wing. Most of the *P. cardui* seen during the September to October period, were more or less worn, and seemed to prefer the open roads and sides of walls to the usual haunts of the species. I append a list of places where I have *seen them, with dates*—

ESSEX.

Ilford, very common, during last three weeks, mostly along the roads and gardens.
Leyton, fairly common, during last three weeks, mostly along the roads and gardens.
Hackney Marshes, five seen, during last three weeks, flying across fields.
Leyton Marshes, four seen, during last three weeks, flying across fields.
Tottenham Marshes, three seen, during last three weeks, flying across fields.
East Ham, two seen, September 23rd (one), September 30th (1), flying along Barking Road.

SURREY.

Raynes Park, five seen, October 3rd (two), October 10th (three), flying along road and two sunning themselves on a wall.
Wimbledon, two seen, October 3rd, flying along road (very worn).

S.W.

Earlsfield, one seen, October 6th, flying along road (very worn).
Wandsworth, two seen, October 6th, flying along road (very worn).
Finsbury Circus (heart of City), one seen (very worn), October 15th, settled on the stone pillar of The London Institute, curiously enough, the meeting-place of the City of London Entomological Society.

I have confined these notes simply to London, but the general statements no doubt would apply equally to various other places on our south and east coast, *e.g.*, Worthing and Brighton, in Sussex, have had their share, as well as Bexley, Strood, and Chislehurst (in Kent), Reigate and many other places in Surrey, whilst Milburn records them as far north as Durham. No doubt you will receive many more notes from various contributors to your pages. When these have been properly arranged with dates, no doubt some general conclusions as to the direction and extent of the flight may be formulated. It would be most interesting if the many lepidopterists who make their observations in France, Switzerland, &c., would record if anything special has occurred with regard to this species in their various districts.—C. P. PICKETT, F.E.S., Leyton. *October* 18*th*, 1903.

ABUNDANCE OF LARVÆ OF SPILOSOMA LUBRICIPEDA.—The garden has been quite overrun with larvæ of *Spilosoma lubricipeda*, which have stripped nearly everything in the garden, especially an elder-tree, of which the stems have been left quite bare.—C. P. PICKETT. *October* 4*th*, 1903.

ENNOMOS AUTUMNARIA (ALNIARIA) AT CHICHESTER.—I have again taken this fine "thorn" here at light this autumn, the first on September 21st, and another on September 25th. Both insects males.—JOSEPH ANDERSON. *October* 8*th*, 1903.

AGRIUS CONVOLVULI AT CHICHESTER.—A specimen of *Agrius convolvuli* was captured here on September 9th, the only record that I have seen of this insect in the locality for the present season.—IBID.

LATENESS OF THE SEASON.—As marking the lateness of the season, I have to record that *Pyrameis atalanta* larvæ were in plenty at Farnham on September 2nd, and imagines of *Bryophila perla* in good condition at Alton, on September 4th, struck me as being very late.—C. W. COLTHRUP. *October* 14*th*, 1903.

PLUSIA GAMMA AT SUGAR.—Referring, again, to Mr. Bankes' note (*anteà*, p. 188) in reply to mine (*anteà*, p. 157) *re* the above, I observe that he has had a similar experience to mine. I believe, however, that the Plusiids, as a family, are not usually associated with sugar, and, taking into account that I had seen this species in hundreds in lucerne fields on the day in question close by where I sugared, I think the occurrence of the two specimens unusual, whichever way you look at it—at least, that is my experience on the S.E. coast, where I have repeatedly sugared when *P. gamma* was swarming, and never had a single specimen at sugar until the above record. As Mr. Bankes gets it "not uncommonly" at sugar, I wonder if there is an absence of wild flowers or light in his neighbourhood. At Southampton, on September 22nd, *P. gamma*, with other moths, was swarming at the electric street lamps, and at shop windows, Lipton's hams seeming to be a great attraction, the moths running all over them. On this same evening at 10 o'clock I watched a large bat hawking round a street lamp, the chief prey seeming to be a moth about the size of *Ennomos autumnaria*.—Ibid. [To get any generalisation of value as to how far *P. gamma* visits sugar, and under what conditions, we would suggest the necessity of Mr. Colthrup going carefully through the whole of the back volumes of the *Ent. Mo. Mag.*, the *Entomologist*, and the *Ent. Record*, collecting all the odds and ends of information thereon, and giving us a summarised result. This takes time, but anything that is to be of permanent value does this. We remember on one occasion, probably between 1885 and 1888, seeing the species in large numbers at sugar at Deal when flowers were exceedingly abundant. This is almost certainly recorded somewhere, and, I believe, there are many other similar notes in back nos. of the various magazines.—Ed.]

SCIENTIFIC NOTES AND OBSERVATIONS.

Note on breeding Eupithecia subfulvata and ab. cognata.—The following note was read on September 22nd before the North London Natural History Society in elucidation of a small exhibit, and, although the exhibit cannot be laid before the readers of the *Ent. Record*, I think, perhaps, the note is not entirely devoid of interest—

"The ♀ parents of these four broods were all taken at flowers of ragwort at Forres during the latter half of August, 1902. They are now so worn as to be absolutely unrecognisable, but were not so bad when they were taken, and I am able to say pretty positively to which form they belonged. From ♀ 1 (type) I reared 10 moths, 9 of the type and 1 ab. *cognata*, Stph. (*oxydata*, auct.)[*], the latter, however, may almost be called an intermediate, so strongly is it clouded with tawny. From ♀ 2 (ab. *cognata*) I reared only 5 (2 of them cripples), all were of the ab. *cognata*. From ♀ 3 (type, I believe, but badly worn), 16 moths emerged; one escaped before I had examined it, 10 of the remainder were typical, and 5 ab. *cognata*. From ♀ 4 (ab. *cognata*) I reared 7, every one of which followed the parent form. The experiment suffices, I think, to show that the species would be worth some careful pedigree-breeding for studies in heredity, and I regret that I was unable to carry it out on a larger scale. None of the ♀s laid very freely. The larvæ on the whole did very well, but there was a heavy mortality among the pupæ—a very unusual occurrence with the pugs. The larvæ were fed almost entirely on leaves of chrysanthemum."—Louis B. Prout.

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[*] On the erroneousness of the application of the name *oxydata*, Tr. (which is a synonym of the *type form)*, to this aberration, see Speyer, Stett. Ent. Zeit., xliv., *p. 350.*

VARIATION.

Abraxas grossulariata ab. cliftoniana, n. ab.—Ground colour of an uniform satiny-white, with a very pale tinge of brown, which is barely discernible; costa more distinctly of the latter colour; thorax pale yellow, with central part dull brown; abdomen of a rich yellow, entirely without markings. The two yellow fasciæ (basal and median) usual in this species are entirely absent. In fact, the only markings on any of the wings consist of small round intensely black spots, differing, however, in size, the whole insect thus presenting a most remarkable and, probably, unique appearance. The stictication is asymmetrical, both on the forewing and on the hindwing. The right primary has fifteen spots, the left twenty-one, the right secondary five, the left four. The spots are distributed as follows:—The right primary has four along the costa, consisting of two large ones near the apex, and two small ones close to the base. Directly beneath the outer of these is a tiny spot almost touching the inner margin. In the middle of the wing are three pairs of smallish spots, the top pair being just above the costa, and running E. and W., the central pair (below the previous pair) running N. and S., as does also the bottom pair, situated directly below the central pair, and placed near the middle of the inner margin. There are also four spots edging the lower half of the hindmargin. The twenty-one spots on the left primary are situated thus:—Four large ones along the costa, of which two are near the base, the outer one having a non-costal one just below it, and two towards the apex. In the subapical area is a further set of three, two large, with a small one between. There is the usual series of seven spots edging the hind margin, and there is another group of six in the median area of the wing, situated towards the inner margin. The right secondary has four large spots on the lower half of the hindmargin and one in the centre of the wing. The left secondary has three spots on the lower half of the hind margin and one near the apex of the same. This aberration is a male, of normal dimensions, and was bred in May, 1892, by the Rev. Joseph Greene, who found the larva feeding on *Euonymus japonicus* at Clifton, near Bristol, and is now in his collection.—(Rev.) G. H. Raynor, M.A., Hazeleigh Rectory, Maldon. *March 6th*, 1903.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Pupa of Epinephele ida.—[Received June 14th, 1903, from Mr. H. Powell, Hyères.] Very close to the pupa of *E. pasiphae* in general outline and in general coloration, but different in details, though some of these may be individual variations, which so many of these pupæ present (I have only one specimen of each pupa), that of *E. pasiphae* died, and has already lost all its proper colour, so that comparison is not possible as to colour. *E. ida* looks *much* smaller, it is really 10mm. long instead of 12mm. It is also more slender, especially in the thoracic region, and looks smaller, therefore, but more swollen ventrally, opposite 2nd to 4th abdominal segments. The relative measurements are:—

Width at	*Pasiphae.*	*Ida.*
Top of mesothorax	4mm. ..	3mm.
3rd abdominal segment	5mm. ..	4·3mm.

The dorsum of the 1st to 4th abdominal segments is nearly a straight line, in *E. pasiphae* it is a decided curve. On 2nd to 7th abdominal segments, near, or just outside line of tubercle ii, are slight eminences, giving the appearance of an angle or row of humps along this line. The elevation would, in fact, not be seen but for black spots and white shading intensifying it. This has, however, to be looked for, description might suggest it as something marked and obvious. The anal spine is a very short rounded hump. The nose-spines differ from those of *E. pasiphae*. The face of the pupa is not, as in *E. pasiphae*, in the same plane as the line of the appendages, *i.e.*, the maxillæ chiefly, but curves backwards (*i.e.*, dorsad) from the mouth to the ridge of spines, and so the two side ridges extending down in front of the eyes, and forming the boundaries of the face, are similarly curved, and not straight, as in *E. pasiphae*, and the actual angle which this ridge makes with the one running dorsad is rather more than a right angle. The width across nose-spines is about 1·5mm., that across the wing spines 3·5mm., and they are 1·8mm. behind nose-spines, and so, on dorsal view, do not at once, by any obvious relationship, challange comparison with the nose-spines as those of *E. pasiphae* do. The one has "high shoulders," the other very sloping ones. The same square area exists between 1st spiracle, wing-spine, and a dorsal ridge, as in *E. pasiphae*, but does not present itself as a square at once as it does in *E. pasiphae*, the dorsal ridge (patagial suture ?) is similarly palely coloured. The wing-ridge is much as in *E. pasiphae*, cutting off a dorsad flat wing surface. The hindwing is a narrow slip uninfluenced by the spiracles, but making them, especially that of 2nd segment, appear thrust back (just as in *E. pasiphae*), the wing extends to end of 3rd segment. The first legs are very short, but proportionally a little larger and broader than in *E. pasiphae*. The second legs reach to the ventral prominence, the antennæ to end of wings, and maxillæ fractionally beyond. The wing sculpture consists of raised lines for the nervures and fine transverse lines which appear to be impressed, but are very visible with a glass as darker striæ, in much the same pattern as those on *M. galathea* (*procida*) and like the markings of *Cossus*. The margin along Poulton's line is marked by a row of black spots at the extremities of the nervures, 7 in number. There are also various black shadings, where the colour of the striæ extends on the general surface, as in the cell and along nervures 2, 3 and 6. The space beyond Poulton's line which broadens so as to be over 1·0mm. at the apex, is well marked off and has similar coloration to the wing proper, but of a different pattern, tending to oblique dark lines, and massed apically and opposite nervures 2, 3, 5 and 6. The wing-sculpture and marking is really very elaborate and defies description. The antennæ have a pale point on middle of each joint; legs and maxillæ are transversely striated, both as to colour and impression, and on second leg the ends of tibiæ and tarsal joints are dark, with a white spot at their extreme tips. Dorsally there is a suture throughout thorax, all is finely sculptured; the 1st abdominal segment seems to have 5, and the 2nd and 3rd 7 subsegments. There is one movable incision between segments 4 and 5. The 2nd, 3rd, 4th, 5th, 6th, and 7th abdominal segments have a similar dorsal pattern of colour. Two black spots, one behind the other near the dorsum (might be i and ii), another lower down (might be iii), there are also some less regular dark marks near spiracles (which are inconspicuous). Inside (and in some degrees round) the dorsal spots and outside and behind the outer ones are pale areas, giving an effect of pale longitudinal markings. The outer spots and markings correspond with the row of faint prominences already noticed. Ventrally the segments are very contracted. On 9th (8th is so narrow that they seem at first to be on 8th) are two raised points (the cremastral eminences of moulting), nearly black, very small, with the male tubercles between them, very flat and inconspicuous; anal scar well marked.—T. A. Chapman, M.D., Betula, Reigate. *June 14th*, 1903.

Larva of Spilothyrus lavateræ.—A Hesperid larva, found April 20th in the Val Verzasca (*circe* 1800ft.), on *Stachys recta*. It forms a little nest of partially-eaten leaves, held together with a few strong cables of silk. It may be in last instar, but is probably in the penultimate one. Size.—Length unextended, 12mm.; width, 3mm.; width of head, 1·5mm.; of neck (prothorax), 1·1mm. Form.—It is of about uniform size from mesothorax to 8th abdominal, with a marked subspiracular flange, apparently the 3rd or lowest of the theoretical three members of the lateral flange. Segmentation.—Dorsally each abdominal segment is divided into three subsegments, of which the middle is the narrowest, but is broader below, merging in first about level of spiracle. The posterior is not quite so wide as the front one, but is rather fuller, *i.e.*, more rounded. Colour.—Head black; prothorax yellowish, more fuscous posteriorly, with a dorsal plate somewhat interfering with the general yellow effect, being black along its posterior margin, yellowish-brown in front. The remaining segments are nearly identical in colour. Dark dorsally, yellow laterally, much modified by the greater or less expression of pale colour round the bases of the secondary hairs, giving a mixed or marbled colour. These factors result in a narrow (nearly) black dorsal line; the dark ground colour continues down to the immediate supraspiracular level. The lower part of this above spiracle forms a dark band. The rest of this area is pale grey, owing to the pale hair-spots, the darker colour suggesting, however, two black lines at nearly equal intervals from above down. Below this area the ground colour is paler, becoming light yellow on the subspiracular flange. The darker colour still persists, however, in a few irregular markings somewhat concentric round the spiracle. The underside is fuscous, the yellow prolegs looking conspicuous. Hairs.—The larva is conspicuously clothed with white hairs. These all appear to be secondary; the longer are bent or curved about the middle, and are about 1mm. long; there are also a good many shorter. There are twenty or more of the longer white hairs on each side of the head, also much more numerous short black ones, some so short as to be a mere pile or spicules, and some (apparently) clubbed. On either side, beside the top end of the clypeus, is a small yellowish mark caused by short yellowish hairs. Some of the white hairs of head and prothorax have a black spot close to top. It is not clear whether this is true coloration, or a result of touching sap of food. The hairs are few on the dorsal black line, more abundant on the next region, where their pale bases are an important item in the coloration; again, rare on the yellow lateral flange, and present, but shorter, below. Tubercles (?).—There are certain curious structures that are probably the true tubercles, but by no means certainly so. On the abdominal segments, on the first subsegment, a little outside the mediodorsal black line is a raised, dark chitinous circle, without any hair, and looking almost exactly like a spiracle. This might be tubercle i. On the yellow lateral flange, at its most prominent portion, a little in front of the middle of the segment, is another exactly similar chitinous ring, but paler, *i.e.*, brownish in colour. These from their form, colour, and position, may easily be supposed to be the spiracles; they are, perhaps, tubercle iv. A single similar circle is found on the left side of the second abdominal segment, above and in front of the spiracle. This might be iii. No other exists in this position on any other segment. The tubercles i (if they are i) exist on the 2nd and 3rd thoracic on the 2nd (middle) subsegment. No trace of ii or any other of the structures here noted are found. MOUTH-PARTS.—These are not adequately observed, a hope of rearing the larva being entertained. They are black like the head, except the basal region of antennæ and of maxillæ, which are whitish. TRUE LEGS.—The legs are black, but the membranes between the several chitinous plates are pale (dirty white). PROLEGS.—The ventral prolegs are yellow basally, followed by a short pedicel of dirty yellowish-white; summit a fairly complete circle. The inner posterior margin furnished with numerous hooks, apparently in two sizes alternating. Round the anterior margin they become much more sparse, so that, from the middle of the anterior to the middle of the outer margin, they can be easily counted as being five. Thence, on outer and back margins, for about ⅛ of circumference, they are quite wanting. Within the hooks the surface is marked by obscure radial lines with centrally a darker point, really, apparently, a hollow, marking the tendinous attachment. The anal claspers form a disc of three-quarters of a circle, the chord of which forms its posterior border; this border has no hooks. The rest carries hooks, the outer half ten large ones and intermediate smaller ones; on the inner half they are much more crowded and numerous. SUPRA-ANAL COMB.—The supra-anal comb is very distinct, of a dark brown (or blackish) colour, with seven teeth on each side, each shorter than the next inside it. SPIRACLES.—The spiracles are in inconspicuous yellow spots, whose position is already referred to as just below the dark lower band of the subdorsal grey-black area; each seems to be a little raised, and to have a fine brownish oval chitinous ring. The 1st (prothoracic) and last (8th abdominal) are distinctly larger, and are easily seen as yellow spots. [Described at Locarno, April 22nd, 1903.]

The larva moulted on May 5th, and entered its last stadium, and was described when about half grown in this stage, on May 15th, as follows:—About 16mm. long; dorsal area black with slaty-grey marblings, which, with the rather long white hairs, give the larva a hoary look. Seen laterally, the yellow lateral line, shading upwards into the lower members of the slaty-grey markings which here, and also at some dorsal points, have a yellowish tone, gives a very different general effect. The head is black, rugose from numerous depressions of spherical surface, with the margins rather sharp. It possesses a considerable number of long (2mm.) white hairs, like those clothing the rest of the larva, as well as more numerous and shorter black ones, and still shorter very plumose hairs, chiefly in front. These are of a silvery-grey colour, and give a yellowish tone to this part of the head to the naked eye. The spiracles are orange spots; around them is a rather darker shade, in a longitudinal band, of yellowish-grey, marked off by the bright yellow lateral flange (which stands up in a distinct roll in this half-fed larva), and a supraspiracular darker line or band; this band is nearly black, and has very irregular borders. There is also a dorsal black line or band. Between these two dark bands is a broad one of marbled darker and lighter, the hair-bases giving the greater part of the light areas. The segments (abdominal), if divided into three equal portions, would give the two anterior of these as doubtful subsegments, but the posterior one very distinctly so; this subsegment is distinctly paler over the positions of the black longitudinal bands, but can hardly be said to interrupt them, but tends to do so. On the prothoracic segment is a dorsal plate, narrow and transverse, bright yellow just in the middle line (where the other segments are black), and passing into rich deep brown laterally. The spiracle-like tubercles exist dorsally, and in the subspiracular flange, as in the previous skin. The first and last spiracles are very large, the anal plate black-brown; darker beneath, except the prolegs and their bases fuscous-yellow. The circles of hooks have a gap at their outer (slightly posterior) margin, but look complete at a casual glance, and are very nearly so. *May 27th.*—Appears quite full-grown, has been feeding well on *Stachys sylvatica*; 18mm. long; 4mm. thick. Thickest about 6th or 7th segment, thence tapers rapidly to neck, less so to tail end. There are two large lenticles, one on either side of middle line dorsally on each segment, a little before the middle, and in the subdorsal paler area. This lenticle is on the 3rd subsegment, on the thoracic segment, or on 4th if a doubtful 1st be counted. It is found on 2nd and 3rd thoracic and 1st (but not 2nd), and 3rd to 7th abdominal segments on the left side. On the right side it omits 1st abdominal. On the abdominal segments, it is on 1st (or 2nd) subsegment. Laterally, there is a large lenticle on all the abdominal segments, on flange immediately below spiracle; the colour is dark, nearly black, but with pale bands due to excess of pale hair-bases; dorsally it is dark, a broad line or narrow band, next a broad band in which the nearly white hair-bases exceed the dark ground colour by nearly two to one; the same arrangement for a narrower area, but the hair-bases decidedly yellow; a broad band with very few white spots; then a broad spiracular band, whiter above spiracle, yellower below, the upper with a trace of black left, the lower with less; the spiracles orange, just within the lower yellower band, and with a little dark marbling about them; the subspiracular band (with lenticle dull brownish) all yellow; below this a darker band, and then a lighter, with very distinct and separate yellow spots at the hair-bases. The head is black, labrum pale, pale plumose hairs give the aspect of a golden wash to front. The 2nd segment (prothorax) is 1·8mm. across (head, 2·7mm.), with dorsal plate yellow in dorsal line and along anterior margin, shading into orange-brown, and black towards outer and posterior margins; bases of antennæ pale. Ocelli, five close together in a curved row, and a sixth centrally to these. The irregular disposition of lenticles, noticed already, occurs again in an odd lenticle occurring on left side of 2nd abdominal segment, above and in front of spiracle, just within lower dark band; none in this situation on any other segment.

This larva always inhabited a sort of loose cocoon, and though this was not opened when food was changed, it almost always made a fresh one in the new material. This may have been unnatural, and exhausted the larva; at any rate, on June 17th, it was found in such a cocoon, in which it was supposed to have pupated, dead, with some changes in proportions, showing pupation had been imminent.

The larva is not very different in the three stages described, but the three descriptions made under different circumstances may assist in elucidating one another. The special spiracle-like tubercles are called in the last description "lenticles," which is the name adopted by Scudder for these curious developments in Erycinid and Hesperiid larvæ.—T. A. CHAPMAN, Reigate. *June 25th*, 1903.

QUERIES AS TO THE LIFEHISTORIES OF CERTAIN BRITISH ALUCITIDS—INFORMATION WANTED.—Twice in one week have I been brought up sharply, to acknowledge my absolute ignorance regarding certain of our Alucitids, both queries strangely enough having to do with the way in which the species hybernate. In one case, I was told by a lepidopterist, who ought to know, that he believed the imagines of *Eucnaemidophorus rhododactylus* hybernated, in the other case, I was asked point-blank whether I did not think *Mimaeseoptilus zophodactylus* (*loewii*) hybernated as imago. I have to confess at once that I do not know anything about the matter, but I suspect strongly that both species hybernate as mining larvæ, in the case of the last-named as exceedingly small larvæ. My suspicion rests, perhaps, on slender enough grounds. In the case of *E. rhododactylus*, the wild imagines soon get worn after their emergence in July, they will lay eggs at once in confinement, and die very quickly afterwards. In the case of *M. zophodactylus*, the imagines, too, appear to die very quickly in confinement, and not to act as if they intended trying to live throughout the winter following their emergence. The suggestion that either could hybernate as eggs is to me too hopeless, I cannot imagine a "plume" hybernating in this stage, and this leaves me with the suspicion that both species hybernate as small (mining) larvæ. Do they? I, myself, have also a puzzle in hand relating to another species. All our text-books tell us that *Amblyptilia acanthodactyla* hybernates as imago. When I was at Bobbie in the Vaudois Valleys of Piedmont, in August 1901, I found imagines of this species not at all uncommon; and one ♀, that I pinned and set, but did not leave sufficiently long under the influence of ammonia to kill, so that it revived after being set, laid eggs on the setting-board. This astonished me greatly, as I should have supposed that the moth would, even under these conditions, certainly not have laid her eggs so soon after emergence. It may be that a later brood occurs there, but, if so, it must feed up quickly. I have no doubt that Mr. Rothschild, Mr. Butterfield, and other lepidopterists, could clear up the difficulty with regard to *E. rhododactylus*, possibly Mr. Whittle, Mr. Sheldon, or Mr. Bower could manage that relating to *M. zophodactylus*, whilst, no doubt, Dr. Riding, Mr. Bankes, Mr. Richardson, or Mr. Atmore can settle my trouble concerning *A. acanthodactyla* off hand.—J. W. TUTT.

NOTE ON THE EGG, YOUNG LARVA AND FOODPLANT OF MELITÆA THORE.—As I believe the larva of *Melitaea thore* and its foodplant have not been described, it may be worth recording that I found this insect flying in some numbers near Pontresina last July. It was excessively local, and, except one individual which I found elsewhere by itself, they all frequented two patches of ground, some 300 yards apart on one side of the smaller valleys. The chief attraction seemed to be the flowers of a geranium (*Geranium aconitifolium*). A female that I caged upon a plant of *Viola biflora* on July 16th, on the 17th laid fourteen ova, and by the 19th had deposited about 60; but only one upon the upperside of a violet leaf. This fact did not encourage me to believe that I had found the right foodplant, and I spent some hours amongst the insects between this date and August 8th, trying to learn their secret. At last, after carefully examining the ground, and watching the insects, I had come to the conclusion that it very likely was either the geranium or a honeysuckle (*Lonicera caerulea*), for it was only where these two plants grew together that I saw the insects. This was, however, only a coincidence, for, on the 8th inst., I saw a female behaving in a suspicious way, and watched her, through my binoculars, settle on a plant of *Viola biflora*, and presently leave it for another. I thought that she actually had laid, and as she was very restless, I thought it prudent to net her. (She unfortunately perished next day in a cage on my window-sill in a violent rainstorm, full of ova.) Although I could not find any ova after a careful search, this induced me, when the larvæ emerged next day, August 9th, to include amongst the collection of likely leaves offered to them, some of the *Viola biflora*. To my delight they took to these at once, and now, August 26th, are apparently thriving. The young larva, when first emerged, is of a pale, dull yellow, sparsely covered with hairs, and with a black head. After the first moult the colour is a leaden-black, with black head and spines, and there are three conspicuous light patches on the sides on the 5th, 6th and 7th segments. I had no microscope with me, but with a hand lens the ovum of this species most resembled the figure of the ovum of *Melitaea maturna*, in Hoffman's book, only that the grooves appeared deeper cut, and the sides of the ovum more fluted than that of *M. maturna*, the colour being of a very pale, transparent, yellow-green. Besides these larvæ, I brought back from the Engadine larvæ of *Colias palaeno*, *C. phicomone*, *Arctia flavia*, and ova of *Brenthis pales*, *Chrysophanus hippothoë* var. *eurybia*, *C. virgaureae*, *Coenonympha satyrion*, the last three hatching now, and all the produce of caged females.—W. H. St. Quintin, Scampston Hall, York. *August 26th*, 1903.

CURRENT NOTES.

Dr. D. Sharp adds (*Ent. Mo. Mag.*, p. 248) *Phortica variegata*, Fall., a Drosophilid fly, to the British fauna, on the strength of two specimens taken near Brockenhurst at the end of June and early July. Mr. Collin has suggested that the correct name will probably prove to be *Amiota variegata*. Dr. Sharp also confirms *Loxocera nigrifrons*, Macq., as British, several examples having been taken near Brockenhurst.

The receipt of two or three successive circulars stating that it is proposed to publish an account of the "Moths and Butterflies of the United States east of the Rocky Mountains," in two volumes, at the enormous price of £24 for the two volumes, tempts one to ask for details. When one looks at Dyar's *Catalogue* and remembers the extensive lepidopterous fauna of this vast area, and when one further calls to mind Scudder's three huge tomes on the butterflies of a small section of this area, one is constrained to ask for full particulars of the scientific value of the proposed letterpress. These volumes are, according to the prospectus, to be illustrated by the transference "from the wings of real moths and butterflies to a prepared plate paper," but nothing is said of the thorax, abdomen, head (and their various appendages), which we had always supposed were at least of as great importance scientifically as the wings. Nor do we learn the character of the proposed letterpress, which appears to us to be all-important.

At the meeting of the Entomological Society of London, held on October 7th, Sir George Hampson exhibited a collection of Norwegian butterflies made by him on the Dovrefield, on the Alten fiord, at Bossekop, and other localities this year, and remarked how greatly the dates of emergence appeared to differ from those experienced by Staudinger and other collectors. The specimens included fine series of *Colias hecla*, Lef., *Chrysophanus hippothoë* var. *stieberi*, Gerh., *Œneis norna*, Thnb., *Melitaea* var. *norvegica*, Auriv., the Norwegian form of *M. aurelia*, *Argynnis freija*, and *A. frigga*, a Labrador, arctic and North American species, now found further south at Kongsvold for the first time.

At the same meeting, Mr. A. H. Jones exhibited examples of *Erebia christi*, taken this summer in the Laquinthal, and of the several Erebiid species to which it is allied; *Satyrus actaea* var. *cordula*, captured last July at Sierre, having four equal-sized pupilled eyes on the forewings, probably a local form peculiar to this warm locality; and a short series of *Chrysophanus dorilis* (type) and *C.* var. *subalpina* from the Laquinthal, with *C. hippothoë* var. *eurybia*, showing the strong resemblance on the upper surface, which the ♀ of this latter species bears to the ♀ *subalpina*.

At the same meeting, Dr. D. Sharp exhibited specimens illustrative of egg-cases and life-histories of eight species of South African *Cassididae*. The larvæ displayed, with one exception, the peculiarity of retaining the cast larval skins as accumulations on the long anal processes with which the larvæ are provided. The exception is the larva of *Basipta stolida*. In this species the anal tails are more robust and better developed than usual, but they do not carry the exuviæ, and are probably used for some other purpose. The egg-cases showed a very interesting series of degrees of perfection, some of them consisting merely of a few membranes enclosing two or three eggs and covered with a patch of excrement, while, in the case of *Aspidomorpha puncticosta*, the oötheca is among the most remarkable and perfect structures produced by any animals. Mr. W. L. Distant also showed the pupa-cases of some African species of *Aspidomorpha*, South, with the cast heads of the larvæ.

At the same meeting, Mr. Roland Trimen exhibited some cases of mimicry between butterflies inhabiting the Kavirondo-Nandi district of the Uganda British Protectorate, particularly that in which *Planema poggei*, Dewitz, is imitated by an apparent variety of *Pseudacraea künowii*, Dewitz, and also by a hitherto undescribed form of the polymorphic ♀ *Papilio merope*, Cram. This makes the *fourth* pronounced known form of the ♀ *Papilio merope*. The usual and generally distributed form of this sex throughout Tropical Africa is that named *hippocoon*, by Fabricius—an excellent mimic of *Amauris niavius*, L.; all the other forms appear to be very rare, and two of them—*dionysos*, Doubl., and the form from Zanzibar described in Mr. Trimen's *Presidential* Address to the Society on January 19th, 1898—are not direct mimics of any other butterflies, but are least divergent from the non-magnetic coloration and pattern of the male. The form now brought to notice is, on the contrary, a direct and unmistakable mimic of *Planema poggei*: and, as it is inconvenient to refer to the mimetic forms without assigning names to them, Mr. Trimen proposed to style this form *planemoïdes*.

Miss Edwards details (*Ent. Mo. Mag.*, p. 268) the history of *Clostera anachoreta*, the eggs of which were originally taken at St. Leonards-on-Sea in 1893, and died out in 1903. We are amongst those who believe most strongly that this species has no standing in our indigenous fauna. Between 1890 and 1894 we ourselves reared some thousands of examples for experimental purposes; with the exception of a few the imagines were all liberated; and, in 1891, 1892, and 1893, a large poplar tree, some 30 feet in height, in the garden, was nearly defoliated by the larvæ, the imagines from which flew away in due course. In no year could the insect maintain itself with us out-of-doors through the winter from one year to the next, easily as the species could be reared indoors. The summer moths that emerged laid their eggs freely enough in July and August, although wild, but each successive spring the tree had to be restocked from the indoor contingent that cleared three broods a year easily. It is a moth with a distinctly southern habit, and no doubt Miss Edwards' eggs were laid by an escape from one of the very many experimental broods of the species that have been liberated in this country.

Mr. Jäger records (*Ent. Mo. Mag.*) the capture of a specimen of *Ophiusa stolida*, a south European Noctuid, at Dartmouth, on September 23rd last.

Mr. E. Saunders adds *Myrmecoris gracilis*, Sahlb., to the British fauna on the strength of a ♂ caught at Fleet, on heathy ground, near a nest of *Lasius niger*, by Mr. E. A. Butler.

Dr. Wood adds (*Ent. Mo. Mag.*, p. 271) *Agathomyia viduella*, Zett., to our list of British diptera. The captures on which the species is added to our fauna are—♂, June 14th, 1902; ♂, May 18th, 1903; ♀, June 14th, 1902. They were all netted off one sycamore bush in Stoke Edith Wood.

It will save a great amount of labour if those lepidopterists, who are always kind enough to help the author of *The Natural History of the British Lepidoptera* by sending lists, will send direct to him lists of localities (county and places) and dates (for larvæ and imagines), in and on which they have at any time found any of our "plume" moths, especially the common ones. He has practically no Welsh, Scotch, or Irish (except those of Mr. Kane's list) localities, and very few from any of the English counties. Similarly, he has very few from the continent. A tabulated list from each reader of this magazine, if only for one or two common species, without the trouble of writing to each individually, would be a perfect godsend.

Mr. Fieldhouse records (*Naturalist*, p. 424) the capture of eight specimens of *Laphygma exigua*, in the Keighley district of Yorkshire, on September 22nd last. Mr. Porritt, who has confirmed the correctness of the name of the species captured, says that, prior to these specimens being taken, only three examples appear to have occurred north of the London district, *viz.*, two in Pembrokeshire and one at *Liverpool.*

IMPORTANT NOTICE.

A New Volume (Volume IV) of

The Natural History of the British Lepidoptera,

By J. W. TUTT, F.E.S.,

Will shortly be ready for publication. The price to Subscribers is **15s.**

This volume will contain, besides its own detailed index, a comprehensive *General Index* of Vols. I, II, III and IV, which is being prepared by Mr. G. Wheeler, M.A., who has kindly volunteered to do the work. The present publishers state that, having agreed to give booksellers more liberal terms than hitherto on net books, the price per volume will have to be raised (22s. 6d. per volume has been suggested) unless another publisher be found. New subscribers are, therefore, urged to subscribe direct to Mr. H. E. Page, "Bertrose," Gellatly Road, Hatcham, S.E., before publication. Until the date of publication, Subscriptions for Vols. I, II, III and IV will be accepted (if sent direct) at £3 7s. 6d., *i.e.*, a discount of £1 2s. 6d. on the lowest price at which the volumes will be obtainable after the publication of Vol. IV.

The book has met with great appreciation from all the leading lepidopterists both at home and abroad, and should undoubtedly be in the hands of all scientific lepidopterists, not merely as being a resumé of the work done in the various superfamilies treated, but as expressing the views of many specialists rather than those of the author. Some extracts from the various lengthy reviews that have appeared read as follows:—

"Ce livre est d'une inappréciable valeur et d'un intérêt scientifique immense au point de vue de l'étude des Lépidoptères ; il est appelé à rendre le précieux services à tous ceux qui désirent pousser très loin l'étude biologique des papillons. C'est certainement l'ouvrage le plus complet qu'a été écrit sur la matière jusqu'à ce jour ; il crée comme une nouvelle orientation. Ce livre prendra rang parmi les œuvres des plus grands maîtres de l'entomologie."—L. J. Lambillion, *Revue mensuelle de la Société entomologique Namuroise.* November, 1902.

"Tutt's *British Lepidoptera* is the most intrinsic work ever written on the Palæarctic Lepidoptera. The work will be of the greatest help to the scientist who knows the matter well enough to be able to distinguish between what is scientific and what appears merely in a scientific garb. There is nothing written anywhere on European lepidoptera coming up to it in thoroughness."—Rothschild and Jordan, *A Revision of the Lepidopterous Family Sphingidae.* May, 1903.

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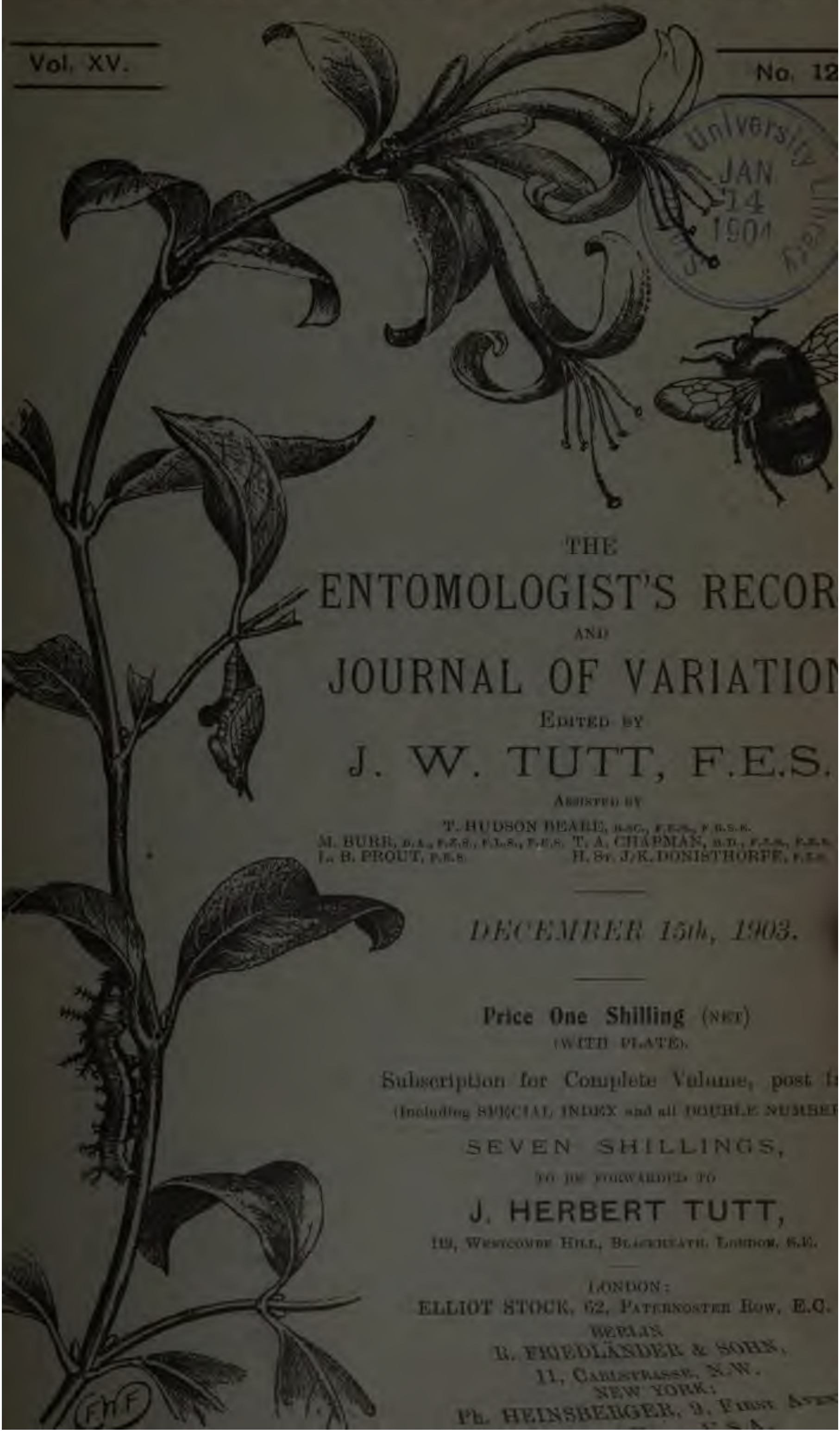

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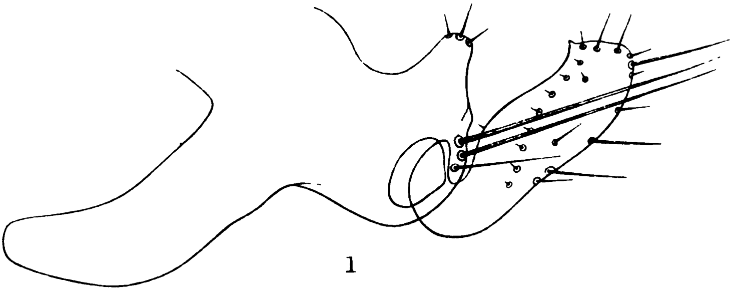

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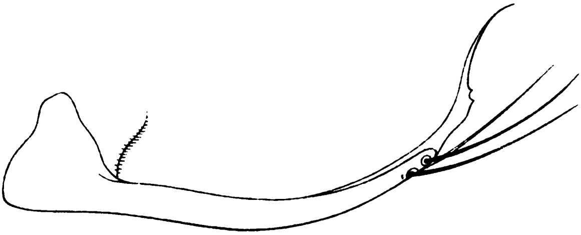

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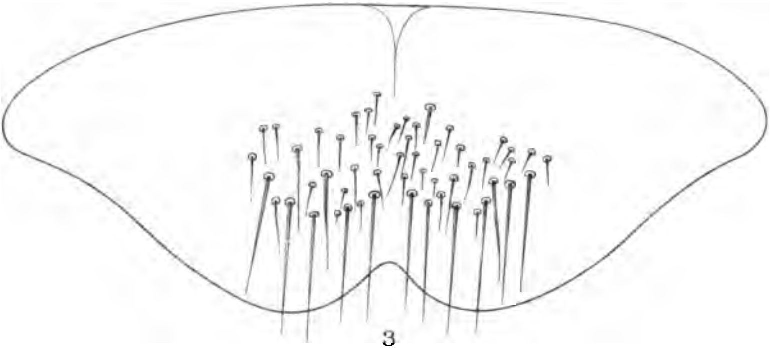

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West, Newman lith.

Ceratophyllus fringillae *(Walker)*.

Entom. Record etc., 1903.

IMPORTANT NOTICE.

I.

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I shall be glad to receive subscriptions for Vol. xvi. (**Seven** shillings) as early as possible. Outstanding arrears must be settled direct with Mr. H. E. Page.

J. Herbert Tutt.

119, Westcombe Hill, Blackheath, S.E.

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All gentlemen who have any outstanding accounts with the magazine—subscriptions in arrear, reprints, back numbers, advertisements, etc.—are kindly requested to send the same at once direct to me.

In case of those who owe anything to the magazine, an account should be found enclosed in the number now forwarded, to which, it is hoped, early attention will be given.

I shall be very grateful if everyone will, to the best of his ability, help me to hand over a clear sheet to my successor at an early date.

H. E. Page.

"*Bertrose,*" Gellatly Road, Hatcham, S.E.

ANNOUNCEMENT.

After ten years' work as Honorary Treasurer in connection with the publication of *The Entomologist's Record and Journal of Variation*, I feel obliged, with great reluctance and regret, to give up this share of my work, at any rate, for the present.

The great increase of work, due to the steady development of the subscription list and the difficulty of collecting subscriptions from a certain small section of our subscribers, make this step necessary. One surmises that a professional man may not be altogether a fair judge of the "business" methods adopted by the Entomological "man in the street" to get something for nothing, but a ten years' retrospect leaves one with the impression that a few who still manage to enter our ranks would be rejected in most other social congeries.

When the editors of the *Entomologist's Monthly Magazine* commenced their second series some fourteen years ago, they pointed out that it would be hard to find a parallel to their own case, *viz.*, a magazine that had been carried on for 25 years for the advancement of science, and on which, although receipts and expenses would about balance, no financial profit had been made by the proprietors. Although I cannot claim that *The Entomologist's Record*, &c., has been in existence 25 years, nor that a debtor and creditor account would quite neutralise each other, or give a balance on the right side, I can claim that, for 15 years, the magazine has been conducted without profit, that any deficit that has occurred has been met, by the Editor-Proprietor, and that the production of an useful, up-to-date, readable magazine, that would advance the scientific study of entomology, has been the sole aim of those who have ungrudgingly worked for its success. Further, that with an honest effort on the part of careless subscribers to pay up their subscriptions to date and without giving trouble, the future of the magazine, financially, is now more than fully assured.

The influence of the *Entomologist's Record* on the other entomological magazines during this period has been most marked. To keep pace, larger numbers, closer printing and more plates have been given, and, at least in one instance, an useful index replaces that which was by courtesy termed an index in former years. Without becoming a rival to either, and recognising that no entomologist worthy of the name can afford to do without any, unless he join the casual army of laggards, I think I can fairly claim that the influence of the magazine has been to raise the quantity and quality of what we may term entomological scraps, that may be used up for standard scientific work when the future author is seeking his materials for special work.

Altogether, therefore, when the success of the magazine appears to be approaching highwater mark, I feel at liberty to hand over the financial reins to another, and the subscriptions for Vol. xvi will be collected by Mr. J. Herbert Tutt, whose energy and greater leisure will no doubt enable him to do this part of the work more efficiently, although I still propose to distribute the magazine, and any miscarriage of numbers, &c., will be referable, as hitherto, to me. All outstanding subscriptions and accounts must, however, be paid to me. I have made myself responsible for these up to, and including, Vol. xv, and *trust that those* who owe anything to the magazine will send the

DECEMBER 15TH, 1903.

same to me without delay. On the other hand, as subscriptions to Vol. xvi become due with the January number, and most of the regular subscriptions come in during the last week of the old and the first week of the new year, I should be glad if these be sent independently, and addressed to Mr. J. Herbert Tutt, 119, Westcombe Hill, Blackheath, S.E.—H. E. Page, "Bertrose," Gellatly Road, Hatcham, S.E.

Some Notes on Collecting Lepidoptera at Wye and Boxhill.

By W. J. KAYE, F.E.S.

In one of the worst seasons on record (now drawing to a close) it is difficult to give a rosy account of any entomological expedition. In a minor way, doubtless, there have been successes, and the old proverb of the "Ill wind that blows nobody good" is once again true enough, and some insects have been really plentiful and evidently found the meteorological conditions suitable to their wants. Grass-feeders, for instance, no doubt enjoyed the luxuriant growth caused by the heavy rainfall of 1902, and let us hope that 1903 will have treated grass-feeding larvæ in the same way. *Pachetra leucophaea* was, this year, almost a common insect in its haunts on the downs near Wye. In this favoured locality inclement conditions do not seem to be much felt, as, at the end of May, this fine insect was already well out. Contrasting strangely with this was *Scoria lineata*, which failed to put in an appearance till June 5th, and then only singly, whilst by June 10th only an odd specimen could be secured, which showed that the insect was only beginning to come out. In the ordinary way the two species are out at the same time, or the Geometrid at most not later than a week after the other. It is possible that the hybernacula of *S. lineata* are not so sheltered as those of *P. leucophaea*, as the former, feeding on chickweed and groundsel unless it has wandered away from its foodplant, would certainly not have such protection as is afforded by the dense tufts of grass beloved by the latter. *Mamestra* (*Hadena*) *genistae* was not very plentiful and was practically over by June 6th. *Agrotis cinerea* was probably late in appearing, as, on June 9th, I took a very fine specimen and only secured two others besides in an eight day period. *Anthrocera trifolii* was just appearing and in very fresh condition. Not being able to secure a series of imagines, a hunt for cocoons and larvæ was made. A large number of Anthrocerid cocoons and larvæ were found, but they did not produce *A. trifolii*, but *A. filipendulae*, and very few of these, as almost every cocoon contained dipterous parasites, while one produced a good-sized ichneumon. The finding of these cocoons has revealed an interesting fact. Nearly all of them were found low down in the tufts of grass (*Poa* sp.) near their foodplant, and, from the fact that they were low down, the erroneous impression was formed that they were very probably *A. trifolii*, which usually has this habit. From the results obtained it appears as if larvæ that are stung spin up low down, while healthy larvæ usually come well up the stem to pupate. Many cocoons were dark-coloured, a fact that suggested that their contents were not healthy pupæ, but some of the cocoons were quite healthy and yellow-looking, yet these *also*, except in two instances, produced parasites*. *Meristis trigrammica* occurred plentifully at the sugar-patches, but the variation was very moderate and the var. *bilinea* was not seen at all. Besides this common species, *Apamea basilinea* occurred, but not in any abundance, and, besides the other Noctuids mentioned, there were no other species on the sugar till June 9th, when three *Mamestra dentina* visited the patches. Of odd species that turned up, either singly or only occasionally, *Ennychia nigrata*, *Anaitis plagiata* and *Cidaria corylata* were secured, while one must not forget to mention that four or five *Eupithecia scabiosata* were taken either by walking up in the day-time or at early dusk, and were in excellent condition. *Leptomeris ornata* was not seen, and was doubtless late in making its appearance. *Polyommatus astrarche* was just beginning to appear as we were leaving. Mr. James, besides the insects mentioned, added *Melanippe hastata* by walking several miles to a wood, but when, on the next day, I went to secure further specimens, none were to be seen. The woods, in this part of Kent, look particularly inviting, but, to the stranger, the downs are even more alluring, as, apart from the specimens, the air and the view from their summit is splendid.

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* *This reads very like Anthrocera* hippocrepidis, St. (stephensi, Dupont), and not *at all like A. filipendulae.*—Ed.

Several days and evenings were spent at Boxhill this year. It is refreshing to know that all the species that used to occur there are still to be obtained, but it must be confessed that some of them want considerable finding. After many previous fruitless hunts for larvæ of *Cymatophora abietaria* this year, a decent number of *Cymatophora* larvæ were beaten on May 16th and 19th. All were assumed to be *C. abietaria*, but six only turned out to be this species, the remainder producing fine *Cymatophora gemmaria*. But the two sets of insects are remarkably interesting. All the six *C. abietaria* are black, whilst all the *C. gemmaria* are normal, some even rather strongly tinged with yellow, and none tend to become ab. *perfumaria*. Observations as to the resting-habit of *C. gemmaria* would be most interesting, and one conceives the idea that it cannot rest on the same surface as does its brother *C. abietaria*, unless a selective agent has not made this latter insect black. Having seen the proportion of *C. abietaria* to *C. gemmaria* in a two-dozen batch of the first larvæ that came to hand, a visit was paid on July 17th, at dusk, to net whatever came. The result was one *C. abietaria* and *C. gemmaria* in numbers. *Ptychopoda fuscovenosa* (=*interjectaria*) was in great abundance and a single *Aventia flexula* was netted. *Lithosia deplana* had not yet appeared. Two days previously, in the afternoon, *Leptomeris ornata* occurred, and, at dusk, *Aventia flexula*, *Eudalimia margaritaria*, *Ptychopoda fuscovenosa*, and *Caradrina blanda*. On July 10th a long search was made for *Cucullia lychnitis*, and the day's bag was seven larvæ. On July 21st the whole day was spent in beating for imagines of *Lithosia deplana*. Quite a large number was seen, but the insects were so shy that it was difficult to secure them. The day was hot (it was one of the few hot days) and the "footman" was to be seen sitting conspicuously on the upperside of a branch of yew. The slightest touch of the tree, and they fell to the ground, where they were invariably lost. At one of the strokes of the beating-stick a belated larva of *Cymatophora abietaria* fell into the tray, which, in due time, produced a splendid black female specimen. Early in May, larvæ of *Eupithecia sobrinata* were plentiful, and even more so were those of *Lithosia deplana*, from May 18th to 22nd. After three years' failure I *managed to breed* a few specimens of the latter, but the number one loses makes it rather a waste, as I had at least three dozen larvæ. They feed up very slowly, are fearful cannibals, and eat a good deal of lichen. Mine were fed on the common green powdery species, that grows on almost any damp surface. By keeping them in a closed tin the lichen keeps fresh pretty well, but it is difficult to get a sufficient supply. It is satisfactory to know that, by careful treatment, one can breed this species, as one hears of failure so frequently.

Ceratophyllus fringillae, Walker* (*with plate*).

By the Hon. N. C. ROTHSCHILD, B.A., F.Z.S., F.E.S.

In our previous article on the fleas found on birds†, no mention was made of that species commonly found in the nests of the House-sparrow (*Passer domesticus*). At that time, we were unable to decide whether the insect which Walker described as *Pulex fringillae*, in 1856, was really distinct from its close ally *C. gallinae*. A careful examination and comparison of a very long series of both insects have convinced us that these two species are abundantly distinct.

The flea commonly found on the sparrow is much paler than *C. gallinae*, and a little smaller. The pronotal comb of *C. fringillae*, moreover, consists of from 29 to 34 spines, while that of *C. gallinae* usually has less than 28. These spines are slenderer than those of *C. gallinae*, owing to there being a larger number in practically the same space. The metathoracic epimerum of *C. fringillae* bears five hairs, one being situated at the apex, two beneath the stigma and two near the base. *C. gallinae* has from six to seven hairs on the epimerum. The hind femur of *C. gallinae* bears, on the surface, a lateral series of five or six hairs, while in *C. fringillae* there are eight or nine similarly situated. The tarsal segments bear fewer hairs on the ventral surface in *C. fringillae* than in *C. gallinae*; the basal pair of hairs, moreover, found on the second, third and fourth tarsal segments in *C. gallinae*, are absent in *C. fringillae*. The movable finger of the clasper of the male of the present species (fig. 1) is slenderer than in *C. gallinae*, and the hairs are different in length and position. At the hinder edge there are three long hairs besides some short ones, which are far thinner than those of *C. gallinae*, and of which the uppermost is the longest. In *C. gallinae*, however, the two lower ones are longer and stouter than the one situated at the apex. The manubrium is strongly curved in *C. fringillae*, while it is nearly straight in *C. gallinae*. The eighth sternite bears at the apex from two to four bristles only. It is, moreover, produced at each side into a membranous tapering flap, which appears as a direct prolongation of the sternite. In *C. gallinae* this flap stands nearly at right angles to the sternite. The 7th sternite of the female of *C. fringillae* is similar to that of *C. gallinae* but bears more hairs (fig. 3).

We have examined a very large series of both sexes of nearly 100 specimens of this insect taken from the nests of the House-sparrow (*Passer domesticus*) at Tring in 1900 and 1902. In addition to these we have received one female specimen taken from the nest of a swift (*Cypselus apus*) in August 1901, near Bridgewater, by Mr. G. Jare, and four female specimens taken from the nest of a Great Tit (*Parus major*) at Kingsland, Herefordshire, by W. R. Williams.

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* *Pulex fringillae*, Walker, Dipt. Brit., III., p. 4 (1856).

† *Nov. Zool.*, VII., p. 539 (1900).

EXPLANATION OF PLATE.

Fig. 1. ♂ 9th tergite of *C. fringillae*.
,, 2. ♂ 8th sternite of *C. fringillae*.
,, 3. ♀ 7th ,, ,, *C. fringillae*.

The Revision of the Sphingides—Nomenclature, Classification.*

A first impression, on looking through these two thick volumes, is that they represent a vast amount of detailed work, made on an unprecedented mass of valuable material. The further one examines them the more this impression is felt, and is increased by realising how much of the work is largely in new directions—new, at least, in so detailed a form—and how careful and accurate it is. Further, so far as one who has recently been over the ground, though in a comparatively perfunctory manner, may judge, the broad lines and the many items of detail of the classification, where these go contrary to generally received views, are sound and correct.

The work begins, after the introduction, with an important essay, divided into two parts, on the Principles of Nomenclature and on the Principles of Classification. These are deserving of much respect, if only as the views of the authors of such a work as that before us, enhanced when we remember other work of the same character for which we are indebted to them. These principles commend themselves by their soundness and coherence, and by the direct logic, like a problem in Euclid, by which they are here explained to us. As an anticlimax, the writer may add that they are very close to opinions he has arrived at, after wandering through many heretical pastures. The heresies that were most difficult to get rid of were founded on natural apathy—why disturb the names we are used to? Cannot you have a statute of limitations? If a name has, say, 20 years' prescription, why upset it? The whole of this essay should be read by all those who are discontented with things as they are, whether they be our leaders, who are not fully agreed amongst themselves, or their followers, who experience the many inconveniences without fully realising the advantages of the various efforts made to attain stability in nomenclature.

It is difficult to retain the cogency of the argument and yet condense the points within narrow limits. (1) "*Every name is a term for a definition.*" (2) "It is absolutely necessary that a definition should be replaced only by one and the same name, and that a certain name should apply only to one and the same animal *everywhere*. Whoever adheres to this principle of stability of nomenclature must concede that this end can only be attained by adhering to the first defined name for every animal or plant." (3) "Everybody who agrees that for the sake of a stabile nomenclature the first name should be strictly preserved, gives to the first individual or individuals which became known to science an importance, in respect to nomenclature, which none of the later discovered specimens can acquire."

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* *A Revision of the Lepidopterous Family* Sphingidae. By the Hon. Walter Rothschild, *Ph.D., and* Karl Jordan, M.A., Ph.D. Supplement to Nov. Zool., *vol. ix. Pp. cxxxv+972.* Pl. 67. Tring, April, 1903.

An absolute adherence to the doctrine of priority is the keynote of the authors' position, and the reasons for it, though more fully stated, may be gathered from the quotations just given. They apply it to the elucidation of how to treat a composite species. We find an important point dealt with very briefly in the following way:—"No compromise is possible. Personal preferences for euphony, so-called purity of language, &c., must be sacrificed by all those who sincerely advocate stability of names; there is no help for it." We object to "so-called" as possibly containing a reference meant to be unkind to some of our more classically-minded nomenclators, but the principle involved is sound. Rottemburg called *Celerio gallii*, "*gallii*." No doubt he meant "*galii*"; still, who is to be sure that he did not mean the name in honour of some Herr Gall, latinised Gallius. Ah! it ought to have been Gallus, and thence *galli*. Well, there are many other possible hypotheses, all in the highest degree improbable, doubtless. The real reason for adhering to *gallii*, of course, is that a rule is a rule, and if you break it on a grammatical excuse, however obviously a good one, how shall you avoid a change being made when the excuse is not so good, is doubtful, is bad, is very bad. It is also the case that someone, accepting *gallii* in good faith, might have named, say, *vespertilio—galii*. The matter must be taken in this way—an author gives a species a name, that name is a word, and that word is the name of the species, and must be accepted simply, without any reference to how or why the author selected or formed it. Questions as to the how or why of the name may be interesting from many points of view, but have *no bearing on the validity* of the name. It took us much wandering in the desert to induce us to accept this conclusion; such names as *gallii* were objectionable, but we finally came to the conclusion stated in the *Revision*—"No compromise is possible." Some interesting cases in point are discussed in the *Ent. Mo. Mag.*, October, 1903, p. 259. We find it there recorded that an author spelt a name in *eight* different ways. We can have no hesitation in saying strict priority is the only solution. Nevertheless, some of the names there quoted are so terribly barbarous that it is hard to suppress one's desire for "purity of language."

Some paragraphs are devoted to the meaning of the word type. It seemed doubtful whether there was any necessity for such a primary disquisition. There has just come to hand, however, an illustration that fully justifies the authors' spending some trouble to state the point. We were somewhat astounded to read by an author of some literary culture, "The utterly unscientific position that the first described form must be regarded as the type can hardly have a better illustration than is afforded by this species ('*Icarus*'). The ♀ *Icarus*, Rott., only differs from the ♂ by its border of orange spots on upperside. If it is held, as it certainly should be, that the name *Icarus* must be applied to this unusual form, then Hübner's name *Alexis* must be restored for the true type," &c. It is clearly pointed out by Rothschild and Jordan that the type, for purposes of nomenclature, is the first specimen of the species to be named. It matters not what var. or ab. of the species it may be, it is the type for the name—*e.g.*, if it was called *icarus*, then all the other specimens of the same species as that first specimen are also *icarus*. Such is one use of the word type. Another use is to describe certain specimens as "typical forms" of the species, meaning the form which is supposed to be the commonest, the most widely spread, or the most ancient, &c. "The type is, as such, not at all the type of the species, but is the type for the arbitrary name given to the first specimen or specimens, and applied by common consent to all the specimens which belong to the species, of which the type specimen is only a member, like any other individual." A moment's thought will surely show that since the greatest differences of opinion exist in the case of many species as to which form is typical, and since opinion must certainly vary as each species is more fully understood throughout its range, no finer source for *instability* of nomenclature than this confusion of two distinct meanings of the word type can be imagined.

Although it is dealt with under the name of classification, the system of what has been called trinomial (as distinguished from binomial) names, is rather one of nomenclature. Some hard things have been said of our authors under this head. It is difficult, however, to find any real fault with their position. A certain species is called *Celerio euphorbiae*, generic and specific names. Our authors so call it—pure binomialism. They point out that it has many other names. It is a *Sphingida*, as belonging to the family of *Sphingidae;* a *Choerocampina* by subfamily and by tribe. Though these names exist they are not stated when we mention *Celerio euphorbiae*, and do not interfere with the binomial system. Similarly, names on the other side, as of varieties, form, aberrations, &c., exist, but, equally, their existence does not interfere with the binomial appellation of *Celerio euphorbiae* for the species as a whole. We are not discussing whether *tithymali* be or be not a distinct species. Our authors regard it as a var. of *C. euphorbiae.* It has been usual to state this by calling it *C. euphorbiae* var. *tithymali.* In the *Revision* we find *C. euphorbiae tithymali.* Trinomialism! When we come to what, in this case, is apparently the typical form in both senses, we have *C. euphorbiae euphorbiae*, and as forms of this *C. euphorbiae euphorbiae* f. *grentzenbergi*, &c. Now, if we use these same words the use or disuse of the little syllable *var.* can hardly make the difference between binomialism and trinomialism. *If you are to name varieties and aberrations you have the thing*, and you may write it down with any variations you like. By omitting the particle var. you have simplification, nothing more nor less. The authors object to *var.* as not being of sufficiently defined meaning. *C. euphorbiae tithymali* means that *tithymali* is not a var. in the common, loose sense, still less an aberration, but is a geographical race or subspecies. For the fourth name an initial is inserted for such terms as aberration (*ab.*), form (*f.*), local form (*f. loc.*), seasonal form (*f.t.*), &c. We think it would be found of definite advantage that the specific be divided from the subspecific name by, say, a comma. This would, we imagine, be better grammar and would do much to disarm those who take their stand on binomialistic purism. The *icarus* difficulty would, of course, be solved by calling the type (natural type as accepted generally) *Polyommatus icarus, alexis.* We are not learned enough in the various forms of *icarus* to say whether the type (nomenclatural) would be a specimen of *P. icarus, icarus*, or of *P. icarus* ab. *icarus*, or *P. icarus, f.* ♀ *icarus.* The difficulty is not in handling the names but in our knowledge of P. icarus. Whilst wholly approving of the general principle here laid down, when we come to their application, we find that "personal preferences for so-called purity of language" are *not* sacrificed by our authors. No doubt it is grateful to the petty spitefulness of ordinary humanity to find them, after expounding principles and laying down rules in so godlike a manner, to be, after all, so very human. According to a practice they formulate in *Nov. Zool.*, vol. ii., p. 175, specific names derived from names of persons are to have one "i" not two added. This is an excellent rule to follow, but it must not be retrospective. "No compromise is possible." Nevertheless, we find, for example, *dahlii* altered to *dahli*, and *abbottii* to *abbotti*. A somewhat curious circumstance is that our authors say *dahli*, but give all the synonymic references to *dahlii*, *dahli* appearing in this work apparently for the first time. But when we come to *abbottii*, which is the name given by Swainson to *Sphecodina abbottii*, p. 602, our authors give everywhere *abbotti* and *abboti*, although, in each of the few instances we have looked up, the references are to *abbottii*, following Swainson, or *abbotii*, corrected by the American authors to accord with the name of John Abbot, which Swainson, however, writes Abbott. We have little doubt our authors are the first to write *abbotti*, but they ought, according to their own rule, to have written *abboti*, yet to this name (really, no doubt, *abbotii*, though they quote *abboti*) they put a note of astonishment. All which muddle enforces the propriety of the rule "*No compromise is possible*," and these two names, with all others, should be left as given by their sponsors, *dahlii* and *abbottii*. These remain the names, though it should be proved that no such persons as Dahl or Abbot ever existed. We wonder whether Swainson knew the name was Abbot, but thought "purity of language" required Abbott. Correctly, but inconsistently, we find *Amphonyx duponchel*, useful, perhaps, as a barrier against *machaoni*, *irisi*, &c.

(*To be continued.*)

Critical Note on Melitaea parthenie and M. athalia.

By CHARLES OBERTHÜR, F.E.S.

These two insects, closely allied, but quite distinct specifically, inhabit the same districts (but each maintaining its own habitat), in the neighbourhood of Rennes. *M. athalia*, however, extends further north than *M. parthenie*, and I believe that, in the northwest, Rennes is the last locality for the latter species; nor have I ever found this species farther north than Cesson, a village situated some 4 kilomètres east of Rennes. I have, however, found it at Mesneuf (14 kilomètres southeast of Rennes), and in the neighbourhood of Bourg-des-Comptes (16-20 kilomètres southwest of Rennes), the latter being the farthest locality to the northwest, known to me, for *M. didyma*. *M. parthenie* prefers a dry habitat. It appears twice in a year (1) at the end of May and the commencement of June, (2) in August, exactly as does *M. didyma*. *M. athalia* only appears once a year (throughout June) in the neighbourhood of Rennes, up to mid-July at Huelgoat (Finisterre), the most westerly locality in which I have found it. It is found throughout the north of France, and is, of course, continued into England. In the neighbourhood of Rennes, *M. athalia* inhabits chiefly damp woods and wooded fields. I have found it abundantly in the forest of Rennes, in the woods and forest of the Montfort district, in the woods of Vern (10 kilomètres south of Rennes), and, formerly, in a meadow, by the side of the river Ize, at the foot of a rough hill at Mesneuf. The field is now under cultivation, and the locality destroyed.

M. parthenie is generally smaller, of a clearer fauve colour, less brown and less dark than *M. athalia*. The ♀s of *M. parthenie* are often powdered with greenish-grey, with a clear, median area, a little like the ♀ of *M. deione*, but they vary much in tint, almost as much as *M. didyma*. The larva of *M. parthenie* lives on *Plantago*. For many years it was abundant in the heart of the abandoned quarry (*carrière*) of "pince-poches" at Cesson. This schist quarry is no longer worked, owing to the stone proving insufficiently durable, but an abundance of *Plantago* and other plants have sprung up amongst the broken schist, and *M. parthenie* has become very common here. The imagines rest on the flowers of *Leucanthemum vulgare*, and it is easy, by examining those at rest on the flowers, to select those required. In this way I captured the aberrations which I have noted in the *Bulletin de la Société Entom. de France*, 1900, pp. 276-277, in a paper entitled " Sur la variabilité de *Melitaea parthenie* en Bretagne," with which a plate is published, in which nine aberrations are figured by means of a photographic reproduction.

M. athalia, in the larval stage, lives on *Melampyrum pratense*. It offers, in the imaginal stage, some analagous aberrations to those of *M. parthenie*, but more rarely. On dull days in June, one may seek successfully aberrations of *M. athalia* resting on the flowers in wood-ridings, in the roadside ditches, along pathways, or in clearings of the forests. One can, by walking, thus examine a large number of specimens, and one frequently finds among the normal examples at rest a more or less aberrant individual.

The form of *M. athalia*, found in the forests of Brittany, of Limousin, and near Paris, appears to be the same, but, in the south of France, it is rather different, and the form found in the plains and the lower mountains of the south has a less deep colour, and is brighter and clearer than in the higher mountains, and in the plains of central and western France.

M. parthenie inhabits, to my knowledge, all the west of France to the south of Rennes along the coast. It rises in the Hautes-Pyrénées to 1800 or 2000 mètres. It is common in the Alps, and, near Zermatt, is found even at a greater altitude than 2000 mètres. Those who know *M. parthenie* and *M. athalia* in nature could not confound them. They are distinguished as easily as are *Plebeius aegon* and *P. argus*, for their habits, the localities frequented by them, and the times of appearance constitute an " ensemble " of detail more easily observed and understood than defined, but which the experience acquired in the field makes valuable to us, so that no uncertainty exists in our minds as to the distinct separation of the species in question.

Lepidoptera from Normandy—110 miles from the Sussex coast.

By J. W. TUTT, F.E.S.

Mr. L. Dupont has just published a first-class catalogue* of the lepidoptera of the district around Pont-de-l'Arche, a little Norman town some 30 miles behind Rouen, almost directly opposite Eastbourne, and only some 110 miles distant therefrom. It is remarkable that a place, not much further distant from Hastings and Brighton than is Cambridge, should boast of a fauna that appears to us almost incredible. Among the Diurni recorded are—*Papilio podalirius*, *P. machaon*, *Aporia crataegi*, *Pieris daplidice* (uncertain as with us), *Apatura ilia*, *Melitaea cinxia*, *M. phoebe*, singly; *M. parthenie*, as a double-brooded species distinct from *M. athalia*, *Brenthis dia*, regularly in two broods; *Issoria lathonia*, *Hipparchia briseis*, singly; *H. arethusa*, abundant in one locality; *Pararge maera*, regularly double-brooded; *P. achine*, very common locally; *Coenononympha arcania*, common; *Thecla ilicis*, very common; *Chrysophanus dorilis*, double-brooded, rather rare; *Polyommatus baton*, singly; *Nomiades semiargus*, rather common; *N. cyllarus*, singly; *Spilothyrus alceae*, common; *S. altheae*, uncertain; *Syrichthus alveus*, rather common.

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* *Catalogue des Lépidoptères des environs* de Pont-de-l'Arche (Eure), par L. *Dupont*. *Published* by Lecerf Fils, Printers, Rouen.

It is well worthy of consideration, that this list, containing as it does such a large number of species of butterflies, enumerating the lepidopterous fauna merely of a district for eight miles around a small town, and comparable with many a town and district in Sussex or Hampshire, apparently lacks only *Apatura iris*, *Coenonympha tiphon*, *Thecla w-album*, and *T. pruni* of the whole of the present British butterfly fauna, produces many species abundantly that are with us quite rare, and has sixteen species that the most sanguine lepidopterist could not admit into the genuinely native British list.

Among the moths also are many notable species, *e.g.*, *Hyloicus pinastri*, rare; *Hyles euphorbiae*, rare; *Hoplitis milhauseri*, not uncommon; *Porthetria dispar*, abundant; *Odonestis pruni*, a single example; *Dendrolimus pini*, a single example; *Aglia tau*, moderately common; *Thyris fenestrella*, rare; *Leucania l-album*, very common; *L. albipuncta*, very common; *Mellinia ocellaris*, rare; *Orrhodia erythrocephala*, generally rare; *O. vau-punctatum*, rare; *Xylena furcifera*, rare; *Calophasia lunula*, *Pseudophia lunaris*, singly; *Aplasta ononaria*, rare; *Thalera fimbrialis*, *Acidalia macilentaria*, rather common; *A. humiliata*, *A. punctata*, *Ephyra ruficiliaria*, *Rhodostrophia vibiciaria*, rare; *Lythria purpuraria*, rather common; *Ortholitha moeniata*, rare; *Asthena anseraria*, one example; *Eupithecia millefoliata*, *Phibalapteryx aquata*, rare; *Metrocampa honoraria*, rare; *Thamnonoma contaminaria*, rather common; *Dysauxes ancilla*, rare; *Anthrocera purpuralis*, rather common; *A. achilleae*, not rare; *A. transalpina*, rather common; *A. carniolica*, rather common; *Pachytelia unicolor*, *Aegeria empiformis*, etc.

Compared with our British list, the Macro-lepidoptera are relatively poor, yet the above species, exceedingly rare, or altogether absent, in Britain, afford ample food for reflection. Those micro-lepidopterists who wish to make a similar comparison, and push the latter home to its logical conclusion, cannot do better than carefully study the details that M. Dupont furnishes.

Synopsis of the Orthoptera of Western Europe.

By MALCOLM BURR, B.A., F.L.S., F.Z.S., F.E.S.

The entire absence of any work in the English language which would enable a collector to identify his captures, the inaccessibility of reference collections, and the confusion that generally reigns in them, have led me to draw up a brief outline of the Orthoptera inhabiting the western portion of the European continent. This, in itself, is not a difficult task; the point upon which I have felt the greatest hesitation is the choice of area. It is a commonplace that "Europe" is a political, and not a zoogeographical term, and a list of any animals confined to Europe in the ordinary acceptance of the word would arbitrarily exclude a large number of closely-allied, often congeneric, forms that characterise the neighbouring portions of the African and Asiatic continents; again, Western Palæarctic would embrace an area wider than the intended scope of this synopsis. I have therefore resolved to confine myself to the Orthoptera found in those countries which are nearest to Great Britain, and so, most frequently visited by British entomologists. It is, in fact, intended as an aid to tourists, in order to encourage them to pay some attention to an order of insects that has met with such unjustifiable neglect at the hands of collectors, and so, in the following pages, the reader will find rough means for determining any Orthoptera captured west of Vienna; the Scandinavian fauna is poor, as also that of northern Germany, but France, Switzerland, western Austria, with Bohemia and the Tirol, afford a rich collecting-ground. Northern Italy, a region that is frequently visited, will well repay collecting, but the greatest wealth of Orthopterous life is in the Iberian Peninsula. Spain and Portugal are little visited by tourists, it is true, but if we are to include the Pyrenees, and south coast of France, the neighbouring districts and countries cannot be omitted. All the genera and species, therefore, which appear to be confined to the peninsula are included, which increases the size of the synopsis, and involves the inclusion of a few Algerian and Moroccan insects that have been recorded from the southern shores of Spain. To pass beyond Vienna would mean the inclusion of Eastern Europe, with Russia, and the Balkans. Orthoptera are not yet sufficiently popular to warrant a work on other than purely systematic and complete lines, dealing with the Orthopterous fauna of all Europe, or of the western part of the Palæarctic Region, and the student who is sufficiently interested to collect forms occurring east of Vienna will be able to employ the various works that have been published on the subject in various tongues.

This synopsis is intended purely as an outline, and an aid to the student, to enable him to become familiar with more important volumes, of which there are three which call for special mention. The standard work on the European Orthoptera is, of course, Brunner von Wattenwyl's famous and oft-quoted *Prodromus der europaïschen Orthopteren*, published at Leipzig in 1882. This is a scholarly work, giving detailed synoptical tables, and descriptions in entomological Latin, while the rest of the book is written in German. This will prevent its ever becoming a popular work, but it is absolutely indispensable to the serious student. A very useful account of the Orthoptera of France is Captain Finot's *Insectes Orthoptères*, published by Deyrolle, in the *Faune de la France* series; it enables the collector to determine about half the species that are found west of Vienna. The distinguished Spanish orthopterist, Señor Don Ignacio Bolivar, has published recently a *Catalogo sinóptico de los Ortópteros de la Peninsula Iberica,* giving a brief outline, with very useful synoptical *tables, of the rich* Orthoptera-Fauna of Spain and Portugal; so many forms are peculiar to these countries that it is an indispensable adjunct to Finot's work. In addition to these three important books, a large number of pamphlets and articles appear frequently in various entomological journals, which must be consulted by the student who wishes to thoroughly familiarise himself with the European Orthoptera, and these will be found quoted in the three works mentioned above.

It must be borne in mind that the points emphasised in the following pages are not always the purely scientific ones, but rather those most easily observed, and that statements made, unless otherwise indicated, apply to European forms only.

Order: ORTHOPTERA.

Section I: Dermaptera.

Family: Forficulidæ.

In earwigs, the characters to be observed are, first, the number of segments in the antennæ; secondly, the shape of the second segment of the tarsi, which may be simple and cylindrical, or heart-shaped; thirdly, the development of the elytra, which may be entire and hinged to the thorax, rudimentary, and entirely attached to the thorax, or wanting altogether; fourthly, the shape of the forceps of the male, which may have the branches separate at the base, or contiguous there, slender, cylindrical, or strongly flattened and dilated, nearly straight, or strongly curved inwards, unarmed or furnished with a varying number of teeth on the inner margin; fifthly, the shape of the pygidium, a small organ present in some earwigs at the apex of the abdomen between the roots of the forceps; this may have a spine, or be produced prominently forward between the forceps, and sometimes assumes curious shapes; sixthly, the shape of the subanal plate, or last ventral segment, and also of the segment preceding it; the subanal plate may be rounded, as is normal, or strongly produced into different shapes.

On capturing an earwig, the collector will do well to first examine whether the elytra and wings are perfectly developed. If they are both rudimentary, the specimens must be either *Anisolabis* or *Chelidura*, which genera are not likely to be confused; if, again, the organs of flight are well developed, the second segment of the tarsus must be observed; if this is simple and cylindrical, it must be a *Labia* or a *Labidura;* in the former, the antennæ have at least 16 segments, and in the latter never more than 16; *Labia*, too, is easily known by its small size and by the spine on the pygidium of the male. If the second tarsal segment is not cylindrical, it is swollen at the end in the form of a heart. The existence of this character is the mark of the group *Forficulae;* if the specimen is a male, next examine the forceps; if the branches of this organ are broadened and flattened at the base, it is a true *Forficula;* if not, either an *Anechura*, which has the forceps bent downwards and the elytra and wings spotted, or an *Apterygida*, in which case it will be entirely pale brown or uniform reddish in colour. The last genus of this group has the elytra rudimentary or absent, and the wings absent. This is *Chelidura*, always dark in colour, with the abdomen broadened, especially towards the apex.

It is extremely difficult to determine solitary females. The generic characters of *Forficula* and *Apterygida* are present only in the males, and females of these genera, and of *Anechura*, are very easily confused.

TABLE OF GENERA.

1. Antennæ with 16-30 segments. (2nd tarsal segment cylindrical).
  2. Elytra and wings perfectly developed .. .. LABIDURA.
  2.2. Elytra absent or rudimentary; wings absent .. .. ANISOLABIS.
1.1. Antennæ with from 10-15 segments.
  2. Second tarsal segment cylindrical .. .. LABIA.
  2.2. Second tarsal segment heart-shaped.
    3. Forceps ♂ broadened and flattened at base. (Elytra perfectly developed; wings usually so).. .. .. FORFICULA.
    3.3. Forceps ♂ remote at base, slender.
      4. Wings and elytra perfectly developed .. .. ANECHURA.
      4.4. Elytra developed or rudimentary; wings always absent.
        5. Slender insects; abdomen not dilated. Forceps slender .. .. APTERYGIDA.
        5.5. Stout insects; abdomen dilated towards apex; forceps more or less stout .. .. .. CHELIDURA.

Genus 1: LABIDURA, Leach.

This genus is widely distributed throughout the world, and the two species occurring in Europe are now cosmopolitan, although probably Palæarctic in origin.

It is characterised by the large number (16-30) of segments in the antennæ, the presence of entire elytra, and usually also of wings, by the absence of lateral tubercles on the 2nd and 3rd abdominal segments; the forceps of the male are separated at the base, not flattened, gently incurved, armed, usually on the inner margin, with a varying number of teeth.

The two species are hardly to be confused. *L. riparia* is large and very pale in colour; *L. dufourii* is very considerably smaller, it is dark in colour, and entirely distinct in appearance.

LABIDURA RIPARIA, Pallas (=*gigantea*, Fabr. et auctt.).

Easily recognisable by its large size and pale colour. Length of body: 13mm.-19mm., ♂, ♀; of forceps, 6·11mm., ♂; 4·6mm., ♀.

It occurs throughout the coast of southern Europe, and also on river-banks; it may be found under stones and refuse, especially in sandy places. In England, it is found in several localities on the south coast, but is a great rarity. In France, it is common enough on the south coast, and has occurred as far north as Brittany; also on the river Allier near Moulins, in the centre. In the interior of Europe it has been taken near Geneva; in Germany in Silesia and Saxony, Thuringia, and near Berlin. It is common enough in Spain and Portugal in suitable localities; in Austria on the Prater, near Vienna.

It is extremely variable in size and colour; the wings and also teeth of the forceps may be absent, and the colour very dark, sometimes almost black.

LABIDURA LIVIDIPES, Dufour(=*dufourii*, Desm.=*meridionalis*, Serville).

Considerably smaller than the last; hinder border of pronotum rounded instead of straight; colour dark. Length of body: 8·9mm., ♂, ♀; of forceps, 2·3mm., ♂, ♀.

It occurs in damp places in the extreme south; in Spain it is met with on the coast of the Mediterranean; the variety *vicina*, Lucas, with *unarmed forceps* in the ♂, is recorded from Chiclana; Desmarest records it from the south of France, but it has not been taken in that country in recent years.

It is common in Algeria, and occurs throughout the Old World.

Genus 2 : Anisolabis, Fieber.

This genus includes a large number of species distributed throughout the world. The discrimination of the exotic species is subtle, but there is no difficulty in recognising the three European forms. The genus is closely allied to the preceding, but wings are never present, and the elytra are usually wanting entirely, or else rudimentary, and cemented to the thorax. The general colour is entirely black, and the forceps of the male have the right branch more strongly incurved than the left.

Table of Species.

1. Rudimentary elytra present..	1. moesta, Géné.
1.1. No traces of elytra.	
2. Size large; antennæ and feet plain testaceous ..	2. maritima, Bonelli.
2.2. Size smaller; antennæ and feet ringed with black	3. annulipes, Luc.

Anisolabis moesta, Géné.

This is the only European earwig that is quite black, with no wings, and rudimentary elytra. Length of body, 11mm.-12mm., ♂, ♀; of forceps 2·3mm., ♂, ♀.

Common in southern Europe in dry places, under stones, etc., and sometimes on flowers. In France, it is abundant at Toulouse, and all along the Riviera. In Spain, it occurs commonly (Madrid, Malaga) but has not been recorded as yet from Portugal. It is found also in Sardinia, and in Italy has been taken in the Campagna near Rome and at Genoa. It occurs also in East Africa.

Anisolabis maritima, Bonelli.

Recognisable by its large size and uniform pale legs and antennæ; in the ♂ the right branch of the forceps is much more strongly bent in than the left.

Length of body, 18mm.-20mm., ♂, ♀; of forceps, 35·5mm., ♂, ♀.

This species occurred in England, at South Shields, in 1855, under artificial conditions. In France, it is rare, but sometimes found on the Mediterranean coast; it has been taken at Nice, and on the banks of the Aude, at Aude. In Spain it has been taken in Andalusia and at Aguilas in Murcia. The ♂ seems to be much rarer than the ♀. It is now distributed throughout the world.

Anisolabis annulipes, Lucas.

Small; black; antennæ dark with pale rings; feet pale, banded with black.

Length of body,; 4mm, ♂, ♀; of forceps, 2·3mm, ♂, ♀.

This is an universally distributed species. In England, it has occurred under artificial conditions in more than one locality. In France, it occurs wild, but rarely, being found in the summer and autumn in the hottest parts of the Mediterranean coast—Hyères, Cannes, Bagnols, Villefranche. In Italy, at Genoa, Pegli, and in Sicily. In Spain it is common in the south and east.

Genus 3 : Labia, Leach.

This is a very extensive genus, consisting of about seventy small species distributed throughout the world. The only European species is easily recognised by its small size, uniform brown colour, and by the small spine on the pygidium of the male.

LABIA MINOR, Linn.

Length of body, 4·5mm., ♂, ♀; of forceps, 1mm.-2·5mm., ♂, ♀.

More or less common throughout central Europe, including England, and the whole of France. It probably occurs throughout Spain, but has only been recorded from a few isolated localities. It flies on warm summer evenings over flowers, dungheaps, etc., often in company with Staphylinids. It extends as far north as Scania in Sweden. De Selys notes that in Belgium it is somewhat local.

Genus 4: FORFICULA, Linn.

This genus includes a large number of exotic forms characterised by the forceps of the male, which are strongly dilated, flattened, and depressed near the base, sometimes for a considerable part of their length.

TABLE OF SPECIES.

1. Wings present (sometimes not very prominent).
2. Elytra spotted.
3. Dilated part of forceps and pygidium short. Wings prominent .. .. SMYRNENSIS, Serville.
3.3. Pygidium and dilated part of forceps longer; wings not prominent .. .. .. RUFICOLLIS, Fabr.
2.2. Elytra plain testaceous .. .. AURICULARIA, Linn.
1.1. Wings absent.
2. Dilated part of forceps long.
3. Pygidium not prominent.. .. .. .. PUBESCENS, Géné.
3.3. Pygidium prominent.
4. Dilated part of forceps not exceeding one-third of entire length of forceps .. DECIPIENS, Géné.
4.4. Dilated part of forceps reaching half entire length .. .. LESNEI, Finot.
2.2. Dilated part of forceps short.
3. Tooth at end of dilated part of forceps.. .. SILANA, Costa.
3.3. No tooth at end of dilated part of forceps .. APENNINA, Costa.

ALTERNATIVE TABLE OF SPECIES (based on Brunner's arrangement, where the elytra of *F. ruficollis*, Fabr., are given as unicolorous, as the spot is sometimes indistinct).

1. Dilated part of forceps having a tooth, sharp or blunt, at the end.
2. Branches of forceps contiguous at base only, separated at the tooth, which is sharp.
3. Hinder border of elytra straight; wings present.. .. .. AURICULARIA, Linn.
3.3. Hinder border of elytra round. Wings wanting .. .. SILANA, Costa.
2.2. Branches of forceps contiguous down to the tooth, which is blunt.
3. Dilated part of forceps very long, the apices almost or quite meeting .. .. .. PUBESCENS, Géné.
3.3. Dilated part of forceps shorter, apices not meeting .. .. LESNEI, Finot.
1.1. No tooth at end of dilated part of forceps.
2. Dilated part of forceps long.
3. Wings absent .. .. DECIPIENS, Géné.
3.3. Wings present.
4. Elytra with a big spot; wings prominent.. SMYRNENSIS, Serv.
4.4. Elytra with indistinct spot; wings developed, but hardly prominent .. RUFICOLLIS, Fabr.
2.2. Dilated part of forceps short .. .. .. APENNINA, Costa.

(*To be continued.*)

Two more seasons among the Swiss Butterflies.

By G. WHEELER, M.A.

The title of this paper is perhaps somewhat of a misnomer, since I was absent from Switzerland during July and the first week of August last year, and this year there can hardly be said to have been a "season" at all; however, it will serve to connect the present with my previous papers, so let it stand. The season of 1902 was late, and not even *Gonepteryx rhamni* put in an appearance till March 7th, followed on the 16th by *Aglais urticae*, and on the 19th by *Eugonia polychloros*, *Vanessa io* and *Euvanessa antiopa*, no freshly emerged butterfly greeting my eye before April 1st, which produced *Pieris brassicae*, followed on the 5th by *Euchloë cardamines*. The next week I went to St. Maurice, when I saw my first *Papilio machaon* of the season on the 14th, *Pieris rapae* and *P. napi* on the 15th, and *Leptosia sinapis* on the 16th, *Pararge egeria*, at Vernayaz, on the 20th, *Cyaniris argiolus* on the 22nd, and *Cupido minima*, also at Vernayaz, on the 25th. Most of these species were late, but *Callophrys rubi* was worn by the 21st. On the 30th, however, I saw 22 different species at Vernayaz, including *Issoria lathonia*, *Brenthis euphrosyne*, *B. dia*, *Nemeobius lucina*, *Polyommatus baton*, *Cupido sebrus*, &c. *Nomiades cyllarus* first appeared at Sierre on May 7th, where I also took a very fresh specimen of the valley form of *Anthocaris simplonia*, hitherto confused with *A. belia* var. *ausonia*, to which I have given the varietal name *flavidior*, another specimen of which I took at Lavey on the 27th. On the 15th I went to Branson to look for *Polyommatus orion*, and found a few only, and those not in very good condition, but this was more than made up for by a magnificent specimen of *N. cyllarus* ab. *subtusradiata*, in which the band of eye-spots on the underside of each wing is prolonged into large black dashes. At Sion, on the 21st, *Melitaea aurelia* was in considerable numbers and fresh, *Nomiades cyllarus* being also abundant. On the 24th came a most welcome visit from Mr. Buckmaster, but the weather was not propitious, and I fear that nothing more exciting was found than *N. cyllarus*, *Cupido sebrus* and *Melitaea parthenie*. During his stay at Martigny, we met several times, but neither of us had much to report; he took two worn *Lycaena iolas*, ♀ and ♂, at Branson, on June 3rd, where I failed to find any on the following day, though I took *Everes argiades* ab. *polysperchon*, *Colias edusa* ab. *helice* and *Polyommatus bellargus* ab. *puncta*, the only form of the latter that occurred that day. On the 2nd I had been to Bouveret, and was disappointed to find no *Brenthis selene*, though I took a couple of *Melitaea aurinia* ♀, of the *orientalis* form, and *M. dictynna* was as fine as it usually is in this locality. May and the first half of June had been wet and cold, with occasional changes to warmth and brightness, but towards the end of this month the weather began to look up, and from the 19th onwards it was mostly magnificent, the one exception occurring on the 20th, when I had gone up the Val d'Anniviers to look for *M. maturna* var. *wolfensbergeri*, and got only a wetting for my pains. At Vernayaz, on the 19th, *Chrysophanus alciphron* var. *gordius*, *Lycaena amanda*, *Argynnis daphne* and *Erebia stygne*, were well up to time, and I took the same species and one *Lycaena iolas* ♂, in excellent condition at Follaterre on the 21st. On the 23rd I went to Châtel-St.-Denis, in order to search the slopes of the Moléson for *Chrysophanus amphidamas*, but an expedition on the following day showed that, in this season, I was too early, indeed, the almost entire absence of butterflies was remarkable, the weather being magnificent. On the 26th I started for the village of St. Georges, in the Jura, passing the night at Gimel-sur-Rolle, where, on my return on July 1st, I obtained a fine fresh series of *Coenonympha typhon*, of a form tending towards *laïdion*, as well as a few fresh *Brenthis ino*. St. Georges itself was my first introduction to the Jura, the butterflies of which are most interesting, very few of the more variable species being identical in form with those of the Alps, the tendency generally being towards southern forms. During the four days of my stay I took the following 45 species:—*Hesperia alveus*, *H. malvae*, *Pyrgus sao*, *Nisoniades tages*, *Pamphila sylvanus*, *Chrysophanus hippothoë*, *Cupido minima* (excessively abundant), *Nomiades semiargus*, *Polyommatus bellargus*, *P. hylas* var. *nigropunctata* only, *P. alexis*, *Rusticus argus*, *R. argyrognomon*, *Nemeobius lucina*, *Papilio podalirius* (common), *Aporia crataegi* (very abundant), *Pieris brassicae* (abundant), *P. rapae*, *P. napi* (one ♀ only near the top of the Jura, intermediate between type and var. *bryoniae*), *Euchloë cardamines*, *Leptosia sinapis* (common), *Colias hyale* (common), *Gonepteryx rhamni* (common, and certainly not hybernated), *Issoria lathonia*, *Brenthis euphrosyne*, *B. ino* (also at Gimel), *Melitaea cinxia* (common), *Melitaea parthenie* (very bright), *M. didyma* (♂ s only, one with a very pale broad border to the forewings), *M. dictynna*, *Pyrameis cardui*, *P. atalanta*, *Vanessa io*, *Aglais urticae* (the last four hybernated), *Polygonia c-album*, *Pararge moera*, *P. hiera* (rather common but becoming worn, very large and dark), *P. megaera*, *P. egeria* (generally var. *intermedia*, and never quite reaching var. *egerides*, mostly much worn), *Epinephele jurtina*, *Aphantopus hyperanthus*, *Coenonympha iphis* (just emerging), *C. pamphilus*, *C. typhon* (at Gimel only), *Erebia medusa* (inclining towards var. *hippomedusa*), and *Melanargia galatea*.

On returning to Switzerland on August 7th, we stayed for a few days at Vallorbe, so that I had a few further days' experience of the Jura. The cold was intense, except for a few hours now and then, but I took the following species:—*Hesperia malvae*, *Pamphila comma* (small and rather dull), *Polyommatus damon* (nearly all tending towards var. *ferreti*), *P. corydon* (very abundant and rather variable), *P. alexis* (very worn), *Parnassius apollo* (mostly var. *pseudonomion*, though not strongly marked), *Aporia crataegi* (very small and worn), *Pieris rapae*, *Colias hyale*, *Gonepteryx rhamni*, *Argynnis aglaia*, *A. adippe*, *Brenthis ino*, *Aglais urticae*, *Limenitis camilla*, *Satyrus hermione*, *Hipparchia semele* (♂ s only, corresponding with ab. *pallida*), *Epinephele jurtina*, *Erebia aethiops* (very abundant, small and strongly marked, mostly ab. *violacea*) and *Melanargia galatea* (very worn and rather small). There is, in the Lycænids, on the Jura, a strongly marked tendency to blue in the ♀ ; Colonel Agassiz has, in his collection, magnificent examples of the vars. *syngrapha*, *ceronus*, *metallica* and *caerulea* from this range, the ♀ s are, indeed, mostly tinged more or less with blue, and I have even taken at St. Georges a ♀ *Nomiades semiargus* in which this tendency is very marked.

On returning to Montreux I twice saw specimens of *Satyrus circe* near Sonzier, *viz.*, on August 30th and September 4th, but on neither occasion was I able to obtain it. I give a list of the butterflies I saw near Sonzier on September 2nd as the date is late for the majority of them, especially as all except *Melanargia galatea* were in good condition. *Nomiades semiargus*, *Polyommatus damon*, *P. corydon*, *P. bellargus*, *P. alexis*, *Papilio machaon*, *Pieris brassicae*, *P. rapae*, *P. napi*, *Leptosia sinapis*, *Colias hyale*, *C. edusa*, *Dryas paphia*, *Argynnis aglaia*, *A adippe*, *Brenthis dia*, *Pararge moera*, *Hipparchia semele*, *Epinephele jurtina*, *Erebia aethiops* and *Melanargia galatea*.

During the whole of the season Mr. Fison had, as usual, kept me informed of his movements and captures, and some of the latter are so interesting that I cannot forbear to mention them. As I did not see them till after my return to Montreux, this is not so much out of the chronological order. On Monte Bré, above Lugano, he took, on April 16th, five specimens of *Libythea celtis*, three of which were very worn, as well as *Polyommatus orion*, *Pararge egeria* var. *intermedia*, &c.; but of his spring captures by far the most interesting was a magnificent specimen of *P. megaera* var. *transcaspica*, a form not hitherto reported from Europe, I believe. In June he was in Weesen, and on the 19th took two perfect specimens of *Araschnia levana* in the Kupfernaseruns gorge, "a sunny, narrow ravine up which the road climbs to the Thalalp See;" the first "on some garbage in the road, in a spot where all the trees (firs and beeches) had been cut and nettles were abundant," the second at the entrance of the Thalalp cow-pastures. The following day he took two more in the same valley and another couple in the Murgthal. "Of these, four were on the road, one on nettles and one on the grass." "Both valleys were cool and turned to the north." At the end of July and the beginning of August he had interesting experiences with Erebias on the Dent du Midi, but, as I repeated these *in propiâ personâ* this year, I will not refer further to them now; I must, hewever, mention the very varied series of *Erebia christi*, which he brought from the Laquinthal—in some ways the most interesting I have seen—and the magnificent forms of *Brenthis pales* from the Dent du Midi, including the dark-banded ♀ ab. *cinctata*, Fav., which so far is believed to be unique.

During the early part of this year (1903), my time was so completely taken up by my book on the Alpine butterflies, which I was hurrying (alas, unsuccessfully) to get out before the summer, that my entomological interests were chiefly confined to correspondence and interviews with entomological friends, including a call from Dr. Lang, together with the inspection of various collections; and in the latter connection I cannot refrain from mentioning a visit in the previous autumn to Geneva, as it procured for me the acquaintance of Professor Blachier, and through him that of M. Gesner-Frey, in whose room at the Museum I was permitted to work. Of the kindness and courtesy of these two gentlemen to one who was then a stranger to them I must not allow myself to speak, as one of them, at any rate, will read these lines. Most of my few expeditions during the spring were made in company with Mr. Sloper, who has already mentioned in the *Entomologist's Record* all that was of interest in our captures, except that, on one occasion, at Aigle, on April 29th, a beautiful, fresh specimen of *Hesperia malvae* ab. *taras* was so obliging as to attach itself to my leg, whence it was speedily transferred to the bottle. At Sion, on May 13th, I found *Nomiades cyllarus*, *Everes argiades* var. *coretas* in fair numbers, and *Leptosia sinapis* var. *lathyri*, a form which was abundant in the Rhone Valley this year, though I have not previously met with a single specimen since 1899. *Brenthis dia* was also flying and *Pararge megaera* very abundant, but I was evidently too early for *Melitaea aurelia*, as there was no sign of it in its usual haunts. An early visit to the *E.* var. *coretas* ground, about a mile to the S.W. of Sion, between the railway and the Rhone, produced a few ♀ s, and a walk through the Pfynwald in the afternoon also gave *E.* var. *coretas*, *Polyommatus bellargus* ab. *puncta*, *Colias hyale*, *Leptosia sinapis* (type), &c., but a magnificent example of *Papilio podalirius* ab. *feisthameli*, which displayed itself fully on a blackthorn bush before my eyes, was lost, my net being caught on the bush. Early on the following morning we went to Zermatt by the first train of the season—not, at this early period, for butterflies, but to exhibit the Matterhorn to some young nieces—and while walking down from St. Nicholas to Stalden, I saw more *Euvanessa antiopa* than I have ever seen before, and took a specimen of *Euchloë cardamines* with the disc of the forewing lemon-yellow on the underside, a form not very uncommon in the Rhone valley, to which I have given the name ab. *citronea*. The following day, when walking down from the 2nd Refuge on the Simplon to Brig by the short road, I found *Nomiades cyllarus* in great abundance in a field about a mile above the town, and, in the same spot, a fresh brood of *Melitaea aurinia*, a very bright form bordering on var. *orientalis*. During May and early June I paid several visits to the Grangettes and to Bouveret in search of *Brenthis selene*, which Mr. Tutt had asked me to procure, but in vain; the only specimen I saw was at Revereulaz, some 2000 feet above the valley, which I visited on May 30th, probably for the only time in my life, for the steepness of the road is frightful; at the beginning of the ascent at Vionnaz I took a good specimen of *Carterocephalus palaemon*, always a sporadic species with us. A five days' visit to the Rochers-de-Naye, beginning on the 12th of June, was wholly unprofitable, though the flowers were in perfection, for thick clouds surrounded the hotel during the whole time, and on the 15th, snow fell from morning till night. The next incident worth mentioning was a visit to Martigny on the 18th, in company with Mr. Sloper, when *Chrysophanus* var. *gordius*, *Lycaena amanda*, *Brenthis daphne*, *Melitaea* var. *berisalensis*, *Erebia stygne* and *E. evias* were obtained, the first two being fairly abundant, and the two Erebias a little worn. On the same occasion I also took *Pararge megaera* ab. *alberti*, which has been curiously common this year in the Rhone valley, especially between Aigle and St. Triphon, a fairly well-marked form, occurring somewhat frequently in the ♀, and occasionally, though rarely, in the ♂. On the 25th I went up the Tinière valley, behind Villeneuve, in search of *Chrysophanus amphidamas*, which Mr. Chadwick had taken there last year. My search was unsuccessful, and the day turned dull, but I took *Pararge hiera* about a mile above Villeneuve, and further up found a good point for *Erebia oeme*, *Coenonympha arcania*, *Pararge moera*, and others were also to be met with. Hearing next morning from Mr. Fison, that he had lately taken *Chrysophanus amphidamas* at Caux, I made an expedition there in search of it, but the time at my disposal was short, and I afterwards discovered that I had not gone quite far enough along the road towards the Rochers-de-Naye. I took, however, among several *Chrysophanus hippothoë* ♀ s, one which had an unusual development of blue spots within the orange border of the upperside of the hindwings.

Coenonympha iphis was very abundant. Having occasion to go the next day to Lausanne, I prolonged my journey to Gimel, where I again found *Coenonympha tiphon* and *Brenthis ino*, but saw nothing else; on returning, towards Aubonne, I took a number of *Epinephele jurtina*, chiefly ♂ s, most of which had the spots on the underside of the hindwings somewhat strikingly developed into eyes; one of them, though rather small, was quite of the *hispulla* form. On the 29th we moved to Lausanne, and on June 2nd spent the day at Vallorbe; *Parnassius apollo* was abundant, but this year the var. *pseudonomion* was by no means the prevalent form; this is perhaps accounted for by the fact that those I found this year were mostly ♂ s, whereas the majority of the specimens which I took the previous August were ♀ s, the latter, as in *P. delius*, running much more frequently to extra red spots. *Erebia stygne* was just emerging, as was also *Hipparchia semele; Melitaea parthenie* and *Coenonympha iphis* were very abundant, and *Polyommatus hylas*, as at St. Georges last year, was invariably of the var. *nigropunctata*. The following day I repeated last year's search for *Chrysophanus amphidamas*, on the west slopes of the Moléson, and succeeded in finding three specimens, all ♀ s, and two of them a good deal worn; this was generally the case also with those which Mr. Fison took at Caux, mostly ♂ s, on the 18th and 24th, though he had taken two at Villars-sur-Gryon rather earlier, one of which may well compare with Col. Agassiz's Tramelan specimens; two specimens, which Mr. Fison took near Tramelan on the 30th, were, however, quite old and battered.

(*To be concluded.*)

A new Phalacropterygid species and genus from Spain—Pyropsyche moncaunella (*with plate*).

By T. A. CHAPMAN, M.D., F.Z.S., F.E.S.

At various dates between July 14th and 24th this year, Mr. Champion and I saw a good many specimens of a handsome Psychid on the wing on Moncayo, at an elevation of 5000ft. to 7000ft. We took six specimens and picked up four cases, two of which were ♂ s, and one of these produced a moth, after reaching England, in August. The other two are females, and differ sufficiently from the male cases to make it possible, but not perhaps likely, that they belong to some other species. We called the insect *apiformis* in the field, but felt very doubtful whether it could possibly be that species. On examination, it proves not to belong even to the same division of the Psychids, being an *Oreopsyche*, and not a *Psyche* (*sens. restr.*), as *Arctus apiformis* is. From its habitat, I propose to call it *moncaunella*. The definition would be :—

A Phalacropterygid, with neuration almost identical with that of *muscella*, Hb., but with very long, pointed forewings, more like an Acanthopsychid, or even an Oiketicid, than a true Psychine. Body brilliant orange, becoming darker and redder posteriorly, and contrasting with dark (black) long hairs on the last abdominal segment. Expanse, 17mm. to 22mm. Habitat Moncayo. [I propose to place the type in the British Museum.]

If one adopts Staudinger's genera in *Catalog*, 1901, then this species is an *Oreopsyche*. Tutt (*British Lepidoptera*, vol. ii) divides the species under Staudinger's *Oreopsyche* into three genera, and *moncaunella*, near to *muscella*, might almost fall into Phalacropterix. [It is very unfortunate that Staudinger uses *Phalacropterix* in quite a different sense for a Psychid (tribal sense) genus, including *apiformis*.]

If, therefore, *Oreopsyche* (Staudinger) is to be divided into three genera (Tutt), it is tolerably certain that *moncaunella* is the type of a new genus, on the ground of the very exceptional form of the wings. I propose for it the new genus *Pyropsyche*, which may be described as follows :—

Pyropsyche, n.g.—A Phalacropterygid (Oreopsychid) genus in which the forewings are very elongated and pointed, markedly differing from every other genus in the group. In the type species the forewings have eight veins from cell, vein *1b* of the hindwing is always (so far as observed) branched, and the colour is largely brilliant orange. Type *moncaunella*, n.sp.

The description of the species is as follows :—

♂. Expanse 22mm., length of forewings 10mm., of hindwings 7mm. (*Phalacropterix muscella*, for comparison, has forewings 8·5mm., hindwings 7mm.). Hind margin very sloping, and forewing pointed, as compared with any other Oreopsychid I know. Neuration of forewing, eight veins from cell, branching of *1b*, 1·4mm. from base; of hindwing, five veins, as in Phalacropterygids, *1a* nearly obsolete, *1c* very weak, *1b* strong, and divides before half its length into two branches. This seems to be so in all specimens. An inner branch from *1b* occurs sometimes in *P. muscella*, but is unusual. Antennæ 6mm. long, longest plumules 2mm., scales to tips, 32 to 34 plumules on either side (in *P. muscella*, 25 to 27). The insect is clothed with long hairs, about 1·5mm. long, on head, 3·5mm. on last abdominal segment, and graduating between these. The hairs on the wings look like an extension of the body-hairs rather than wing-scaling, and are especially long and thick along the inner margin of the hindwing. The tarsi are without hairs, but the tibiæ are clothed with hairs as long as themselves—the anterior sparsely, the posterior almost densely. The hair-scales of the wings are much as in *P. muscella*, but a little less dense. The colouring gives its especial aspect to the species. The antennæ are black, as well as all chitinous parts of the body. On the head the hairs are sometimes entirely orange-yellow; in the type specimen black hairs predominate laterally. On the thorax the hairs are orange above, black below. On the abdomen the hairs are orange-yellow basally, getting redder, till, on 6th segment, they are red rather than orange, and have some black hairs ventrally. The long hairs of 7th segment are entirely black, and contrast sharply with those of 6th. On the legs the long hairs are black, but the scaling of the tibiæ and tarsi is orange, and the chitin of undersurface and of last joint of tarsi is also orange, so that the legs become more brightly coloured towards their extremities. The wing-bases are entirely orange, long hairs, hair-scales, and nervures, and the long orange hairs of inner margins reinforce the mass of abdominal colour. The hair-scales darken outwardly so as to be black by the middle of the wing. The nervures also get darker as they proceed, more by being narrower and more obscured by hair-scales, than by essential change of colour or texture. Still the rough effect is that they are bright orange basally, nearly black towards the cilia. The cilia are long and thick, and are black, except at base of inner margin of forewing and at anal angle and inner margin of hindwing, where they adopt the bright orange coloration. [A close examination of *P. muscella* shows a tendency to yellowish coloration of the hair-scales on the cell of forewings, everything else except the pale tarsi being black.] ♀. The female is about 10mm. long. The ovipositor, when extended, seems not to reach beyond the general rotund outline. The spiracles are well-marked, and the two main tracheæ are very large, tolerably straight tubes, reaching from end to end of the insect. Anteriorly there is a brown chitinous shield, which may be called the cephalothorax, it covers the anterior end, and the dorsum and two sides adjoining. On each side is a lappet, something like a bloodhound's ear. If the insect were distended instead of flaccid, this would probably have a different aspect. The lappets are the sides of the headpiece slipping back over the sides of the thoracic piece; dorsally, however, the head and thoracic pieces are continuous, without indication of joint or suture. The 1st spiracle is in the angle under the edge of the lappet, the thoracic piece is laterally one, but by a faint line, and by its relation to the 1st and 2nd spiracles, it would appear to consist of the dorsal plates of the *1st* and *2nd* thoracic segments. There are two circles in each of which a central hair is doubtfully made out in front of the head, and rather ventrally, that probably represent the antennæ, and two dots or hair-points on the soft membrane below, that no doubt indicate some mouth-parts, behind these the true legs are represented by three pairs of mammillar fullnesses of the integument. The hair-covering is traceable in the abundance of loose hairs, but its nature and disposition are not discoverable. This specimen shows that the female returns into and dies in her pupa-case, from which she probably does not completely emerge, though I saw the moth of one of these cases (doubtless the other, not this one) protruding from the sac.

I have never taken *Arctus* (*Psyche*) *apiformis*, nor seen it in indisputably good condition. With the possible exception of *A. apiformis*, the ♂ *P. moncaunella* is by a long way the most handsome and brilliant of European Psychids. The bright colouring, rounded off by the contrast of the black tail tuft and black fringes and antennæ, make the transparency of the wings very notable, bringing it in line with Hemarids (the bee-hawks). It is fond of resting on a prominent angle of rock, but I was sorry to find it did not always agree to being boxed as it sat. I now add some account of the cases, larva, etc.

Cases.—13mm. to 17mm. long. ♂ 3·5mm. wide, ♀ 6mm. wide, fusiform, *i.e.*, thickest in the middle and tapering to both ends, least to the attached one. The case which produced a ♂ moth has a few bits of stem laid on longitudinally, various shorter bits of stuff laid on also longitudinally, these include a good many bits of stone extremely thin, flat, films mostly, and all laid on so closely and flatly, as very slightly to interfere with the form or thickness of the case. Another case, substantially the same, has a large slab of stone (or slate) on it (nearly 6mm. × 3mm.), also several smaller bits of stone, and more vegetable material laid on it lengthwise, than the first one. The other two cases are thicker (♀s, but may quite possibly belong to some other species). Neither of these has any stone in the covering, but bits of flat leaf and grass-like stem, laid on longitudinally and flatly, *i.e.*, the distal end well fastened down to the outline of the case. It is to be noted that European Psychids with stones in the covering, are usually Oreopsychids, as *tenella*, *leschenaulti*, etc. Those that are not, are of mountain distribution, as *Melasina lugubris*. It is of interest to note that Mr. McLachlan associates a stony clothing on an exotic Psychid case, with the necessity of weighting the case against being blown away by winds in an exposed situation. In our present subject the ♂ case is intrinsically the lighter.

Pupa.—♂. Pupa-case (empty and extended) is 8mm. long, 2mm. wide, of equal diameter from thorax to 7th abdominal, 3rd partially, 4th, 5th, 6th and 7th altogether, free. On 7th and 8th abdominal segments there is, across the somewhat raised dorsum, a raised roll, *i.e.*, more than a ridge, as it were, a cylindrical addition laid across the back and not sunk into the segment or flattened where it is laid on, to any extent. This is thinner at the ends, but ends abruptly, not fading out on the surface. On dorsal view it occupies about ⅜ of the width of segment, and is not so regular in outline as the cylindrical idea suggests, it is about ⅛ of the length of the segment at its widest, dorsally. On top it carries a large number of very sharp, hooked points, directed backwards, they are not regularly arranged, but are two to four deep, from back to front. On the 6th and 5th abdominal segments the arrangement is almost identical, but the roll is not so high. On the 4th it is rather flat, the hooks are less well-developed, and behind it are a few parallel ridges, already indicated in the 5th, on the 3rd this decadence progresses, and on the 2nd the roll is now an area a little more marked than the following ridges, and with some blurred points that hardly suggest hooks. The intersegmental recurved hooks are well developed on the 4th, 5th and 6th abdominal segments, as a row of strongish hooks, or rather two or three rows, but so far alternating as not to be one in front of another. On the 3rd they are represented by a double row of raised points. The wings extend to the end of the 3rd abdominal. The dorsal slit on dehiscence just fails to reach the posterior margin of the mesothorax. On the metathorax there is a dorsal ridge and folds pass outwards to the wider part of the segment, in doing so they open and pass round a space somewhat hollowed, in which is a small cone, surmounted by a hair (probably tubercle ii). On the other segments the larval tubercles are apparently represented by hairs, but all are not made out, the specimen not being mounted transparently. There is the usual pair of anal hooks, immediately behind the genital tubercles. Unfortunately I managed to lose the loose face-piece, so cannot describe the appendage-cases. ♀. One of the ♀ cases contained a pupa-case, containing the remains of a ♀ moth and some young larvæ, dead. The ♀ pupa-case is of the usual chitinous brown, paler towards the head, 10mm. long and 3·5mm. wide at ⅔rds from the anterior end, about the 3rd or 4th abdominal segment, it is, in fact, of the shape of an egg, the posterior being the thick end. There are no legs, wings, etc., their only representatives being very slight roughnesses of the front of the anterior end. By careful examination these are found to represent three pairs of legs and some mouth-parts. On the 7th and 8th abdominals there are dorsally small patches of backward-directed spines, and some also on 6th and 5th that would not be noted but by having first observed 7th and 8th. The dorsal suture splits down to the thoraco-abdominal incision. There is a minute double anal spine. The scars of prolegs are obvious flat circles with concentric rugæ. The hairs of the larva are exactly repeated on the abdominal segments of the pupa, even to the three pairs of minute secondary hairs.

Ovum.—The egg has no discoverable sculpturing, is oval in outline, in fact egg-shaped, narrowing like an ordinary egg, a big end and a little one, but the difference is slight. There is also some difference in form, some being shorter and wider, *i.e.*, more spherical than others. The length varies from 0·81mm. to 0·87mm., and the width from 0·63mm. to 0·70mm. They are laid in the pupa-case, amongst a liberal supply of wool or hairs, and the female dies within the case in front of them.

Larva.—The young larva has black head, and black thoracic plates and anal plates, like the fullgrown one. There is no trace of the false tubercle i, tubercle i being in its usual (Macro-psychid) position, far outside ii. Below the spiracle are two hairs, near together, and on a level, the posterior the stronger; there are two at base of prolegs which have 10-12 hooks. No hair between these is made out. The ♂ case that did not produce a moth showed, when opened, the remains of a larva, and of the pupa-cases of several large chalcids. From this imperfect specimen it appears that the head is black, as well as the first three segments, at least, the 1st and 2nd thoracic segments are *covered dorsally* by complete black plates, with no pale markings except the central pale dorsal line or division; the plate on the 3rd thoracic is less complete, but equally void of marking on either of its lateral halves. On the forward abdominal segments there is a tubercular boss, apparently representing i, but absolutely without bristles; ii is larger and has a bristle. Outside ii, and in front, is the true i with a bristle, and iii is a very large boss with one bristle. The ventral prolegs are circles (?), flattened in front, with 21 to 22 hooks, wanting on the inner fifth of the circle. The anal prolegs have 27 hooks. The true legs have the third pair larger than the others, but less so than is usual in Psychids. They have a rounded boss with long hairs, inside the base of each. A development of a usual structure almost into a palpus. The cast skin from one of the ♀ cases allowed itself to be fairly well displayed, and admits of all the details of hair-distribution, &c., being observed. On the 4th abdominal, tubercles i and ii are reversed in the usual Psychid manner, ii being the larger and on a larger plate; iii has a still larger plate and one hair. Below the spiracle is a larger plate (iv and v ?) with two hairs near together, the posterior being a little the higher and larger. Below this a smaller plate, with one small hair at its anterior angle; below this a plate that is practically part of the proleg, and carries (outside the proleg) three hairs nearly in a row, from the front backwards and inwards, the middle the larger. Inside the proleg is a minute plate and hair. In addition to these normal tubercles there are also three very minute hairs, one of which has a small plate. This lies between iii and the spiracle, the large plate of iii being roughly circular, but with a large sinus at its lower anterior edge to contain the plate of this extra hair. The other two extra hairs have no plates and are close to the anterior margin of the segment, one just in front of i, the other in front of the extreme ventral tubercle, but rather further out, so as almost to be opposite the proleg. The hairs and tubercles of the other abdominal segments are on precisely the same scheme, but have sundry modifications. On the 3rd abdominal there is a false tubercle i, *i.e.*, a small chitinous plate without hair, related to tubercle ii, as tubercle i is in most larvæ except those of Psychids. This plate is larger on the 2nd abdominal, and slightly more so on the 1st. On the 2nd and 3rd there is, behind iii and at a little lower level, a similar plate without a hair, it exists on 1st abdominal, where it is rather larger, and is accompanied by a similar plate above it, and rather above middle of iii. On the 1st abdominal, ii is a very large plate, and iii and the subsidiary tubercle have one plate. Ventrally, the 2nd abdominal segment (having no prolegs) has the double-haired plate (iv and v), the single-haired plate (vi), then a large plate with two hairs at its anterior border, then a transverse plate with a hair at either end. The 1st abdominal is the same, except that this latter plate is united to its fellow of the opposite side, forming a four-haired plate, apparently an approach to the consolidation of plates here on the thoracic segments, in relation to the prolegs. The 5th and 6th abdominal segments are substantially the same as the 4th. On the 7th, the tubercles representing prolegs have two hairs, as on the 2nd abdominal, but the ventral tubercle has only one hair. On the 8th abdominal, tubercles ii are united together to form a dorsal plate; iii is a large plate carrying its proper hair, the subsidiary hairs, as on other segments, and curves round to the back of the spiracle, where it has another large hair, below the spiracle is a one-haired tubercle (probably vi). On the 9th abdominal, i is almost fused to outer end of fused ii, iii (?) has one long hair, and is followed by three tubercles, each with one hair. The specimen is not satisfactory here ventrally. The large anal plate (10th abdominal), 1·5mm. across, has three long hairs on either side, it is straight in front, the remaining margin being a continuous curve. The clasper has a large chitinous plate carrying six (or more ?) hairs. Each of the three thoracic segments has a large square dorsal plate (smallest on 3rd), dark, without pale marking, except median line. Each has four hairs on either side along its anterior margin, in addition, on the 1st is a central hair, and the 1st spiracle towards its lower posterior angle. Below this plate (on each segment) is a plate carrying two hairs, with a small plate and hair in front of it. Below this, again, on the 2nd and 3rd segments, a plate without hairs, and below these the plates that are involved in the true legs. Behind the middle of the dorsal plates of the 1st and 2nd segments is a small tubercle with two small hairs. The most remarkable feature observed is a very definite spiracular structure between the 2nd plate of the 2nd and 3rd thoracic segments. The legs are carried on transverse plates with median sutures, which appear to be homologous with the median ventral plates as represented conjoined on the 1st abdominal. On all these segments they have an outer plate ranging with the proleg plate, and on the metathorax there is, posterior to the main one, a plate that is not represented elsewhere. The secondary hair-point at the front margin ventrally is present on the 2nd and 3rd thoracic. In the middle line, in front of the main plate is, soldered to it by sutures, the rounded eminence that looks almost like a palpus, and carries three hairs. The femur is jointed between this and the main plate, a hardly separated basal piece representing the trochanter (?). The femur carries two strong bristles ventrally; the tibia apically, two dorsal (outer) bristles, two ventral (inner), and one lateral (front); the third (tarsal) joint carries three hairs and the well-developed claw. The black head carries ten or eleven long hairs on either side. The ocelli are in a curve of five, with a sixth central. The antennæ have a very slender chitinous ring as a 1st segment, a long square one as 2nd, which carries a long hair, several minute ones, and a small mammilla as a 3rd segment. The maxillæ are of complicated form, each of their palpi consists of a large basal piece carrying externally a two-jointed process of some thickness, internally a hair or two and a short ring surmounted by a bristle (or two), and four small short thick baton-like palpi. The labium looks something like a spur, the spinneret standing forward as the spike, the basal half of this is beautifully fluted. The palpi are lost or not made out. The jaws are strong and heavy, square, with three well-pronounced teeth, and two inner ones hardly distinct, outside the 1st tooth, have a broad outer slope. There are two hairs on the jaw. The plate carrying three hairs forms a sheath for the proleg. It would be a tube, or, rather, case, surrounding it, but that it thins out and is wanting on the inner side. The hooks of the prolegs are well curved and strong, and vary in number from 17 to 21 in this specimen. The general surface is closely set with fine black points, which range themselves in rows in various directions over short distances, and, in places, have a very elaborate arrangement of collections of *circles and other* curves. This is observable along the incisions, before and behind the prolegs, below iv and v, etc. They are about their own width apart, and are perhaps 200 to a millimètre. This specimen of a cast skin presents as perfect a specimen for the study of the skin anatomy of a Psychid larva as I have ever obtained, and has proved much more easy to examine than any prepared from a living larva. It is, however, very unusual to be able to display a cast skin in this way.

COLEOPTERA.

BLEDIUS TAURUS, GERM., ETC., IN NORTH WALES.—The opening of a new station on the L. and N.W. Railway in July suggested a visit to the Point of Aire, in Flintshire, at the mouth of the estuary of the river Dee. Though I did not get a large number of species, the spot ought to repay further working. In one direction there is an extensive line of sandhills, while, on the riverside, the sand gradually tails off into mud-flats. It was here that I found myriads of burrows of *Bledius*, the commonest species by far being *B. unicornis*, Germ. *B. spectabilis*, Kr., was fairly common, but a single *B. taurus*, Germ., ♂, was far more noteworthy. Nothing very special occurred on the sandhills. I may mention *Saprinus maritimus*, Stphs., as very common, and *Aleochara obscurella*, Gr., whilst *Ceuthorhynchus asperifoliarum*, Gyll., was fairly common in the flowers of *Echium vulgare*.—B. TOMLIN, M.A., F.E.S., Chester.

APHODIUS TESSULATUS, PAYK.—On pages 17 and 76 of the present volume I gave an account of my experiences with this insect during the autumn and winter of 1902. During the past summer I searched for it carefully on Arthur's Seat, but was unable to find any specimens, though other members of the genus were present in the sheep-dung in numbers. To-day, wishing to obtain some living specimens for an entomologist residing in London, I went out to the place on the hill where the insect occurred last year, and at once turned it up again in numbers. There can be no doubt, therefore, that, as far as this district at any rate is concerned, *Aphodius tessulatus* is one of the species ot this genus which occur only in late autumn and in the winter, for, as was the case in December in last year, it was to-day the only insect found in the droppings; and with it were plenty of its larvæ, but still very small, as if they were only recently hatched. I fancy that very likely two other species of the genus, which appear to be excessively rare, are also winter insects. I mean *lividus*, Ol., and *quadrimaculatus*, L., and I would suggest that any coleopterist who lives in a locality in which they have been taken, might find it worth his while to search sheep-dung during November and December in mild weather.—T. HUDSON BEARE, F.E.S., 10, Regent Terrace, Edinburgh. *November 21st*, 1903.

MICRAMBE ABIETIS, PK., FROM BERKSHIRE.—I have just happened to notice in the June number of the *Entomologist's Record* the review of the list of the coleoptera for the *Victoria History of the County of Surrey*. As *Micrambe abietis*, Pk., is mentioned as having only been taken in that county I think it worth while recording that I took an undoubted specimen by beating a fir-tree, in this neighbourhood, in July last year.—NORMAN H. JOY, M.R.C.S., F.E.S., Bradfield, nr. Reading. *October 26th*, 1903.

ORTHOPTERA.

Forficula lesnei, Finot, at Bradfield.—On September 9th, whilst on a visit to Dr. Joy, I swept a specimen of this rare earwig in a wood at Bradfield. This is a new locality for it. It is not, however, its first record for Berkshire, as, in the *Ent. Mo. Mag.* for November, 1897, Mr. Malcolm Burr notes a ♂, the second British authentic capture, taken by me at Wallingford, in September, 1892.—Horace Donisthorpe, F.E.S., F.Z.S., 58, Kensington Mansions. *October 9th*, 1903.

Labia minor, L., in October.—In the *Ent. Mo. Mag.* for November, 1903, Mr. McLachlan records the capture of *Labia minor* at the end of September, and comments on the late appearance. I thought it perhaps worth while, therefore, to record its capture on October 1st, in South Kensington, and on October 2nd I swept it at Tring.—Ibid.

VARIATION.

Aberration of Leucophasia sinapis.—While entomologising in the Wye Valley with my son on June 1st, 1903, he took a specimen of *Leucophasia sinapis*, in which all the ordinarily black scales are replaced by others of a dull orange, causing the underside of the hindwings to very much resemble those of *Pieris rapae*, which was very well described by his exclamation of—"Dad, I have taken an orange-tip wood-white!"—J. T. Fountain, 191, Darwin Street, Birmingham. *November 12th*, 1903.

SCIENTIFIC NOTES AND OBSERVATIONS.

Specific identity of Melitæa deione and M. berisalensis.—In Mr. Wheeler's excellent butterfly book, just published, he has removed *berisalensis*, which Staudinger quotes as a var. of *Melitaea athalia*, to *M. deione*, considering it the northern form of the latter species. In exhibiting some *berisalensis* given me by Mr. Sloper at the meeting of the Entomological Society of London, held on October 21st (*Trans. Ent. Soc. Lond.*, p. li), I remarked that the facies of these examples from Martigny led me to suggest that the insect does not even appear to belong to the *athalia* group; I further suggested that, in my opinion, the insect comes very close to *M. deione*, although my knowledge of the two insects is, at present, too little to agree or disagree with Wheeler that *berisalensis* is a mere Swiss form of the southern species. Powell, however, whose opinion I should be inclined to prefer to that of any other European lepidopterist, writes (*in litt.*, 30, 10/03):—"I have again made a thorough examination of *deione* and *berisalensis*, and am quite satisfied that they belong to one and the same species. When I received a series of *berisalensis* from Mr. Sloper two years ago, I was at once struck by their resemblance to *deione*. The black is rather more extensive, but that is natural, as it occurs further north; the undersides are identical with those of my spring specimens of *M. deione*. I think the additional facts that they have two distinct broods, and that the larvæ use the same foodplant, ought to settle the matter. I cannot think how Staudinger came to classify *berisalensis* as a var. of M. *athalia*; had he given the matter proper attention, the affinity of *berisalensis* to *deione* must have struck him." Mr. Sloper, who also knows *M. athalia*, *M. deione*, and *M. berisalensis* in nature, and who took both *M. deione* and *M. athalia* at Digne about May 26th, 1902, says that "*berisalensis* is, without doubt, the northern form of *M. deione*." It must be conceded that these lepidopterists who know these insects in nature are much more likely to come to a correct conclusion as to their specific value than those of us who only know their dried bodies in the cabinet.—J. W. Tutt.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Notes on the early stages of Agrius (Sphinx) convolvuli.—As I can find, with the exception of Professor Poulton's masterly account (*Trans. Ent. Soc. Lond.*, 1888, pp. 550 *et seq.*), very few references to the early stages of *Agrius* (*Sphinx*) *convolvuli* in the entomological works which I possess or in the magazines, a few notes thereon may be of interest. On September 7th, a damaged ♀ was brought to me alive, which had been taken that evening in Sunderland. As it had been captured not on the wing but by the wing it was by no means in cabinet condition, so I determined to try for ova, and imprisoned it in a large glass jar with sprays of *Convolvulus arvensis* and flowers of *Petunia* and *Nicotiana* as sustenance. It devoted the first few days to knocking off what scales remained, but, by the 18th, had started to lay, producing in all 17 ova before dying. The ovum is already known and has been described, so I need not go further than to say that I was struck, as others have been, with its small size and brilliant green colour. Three or four were laid loosely in the jar and the rest on stems or leaves in small groups. About September 25th a few had changed colour and were now of a pale yellowish-grey tint, and from their collapsed appearance I concluded that they were dead, but in two days more the larvæ began to hatch—8 in all. The remaining eggs also changed colour but failed to hatch, chiefly, I think, because the leaves turned wet and mouldy. The young larva is very slender and fragile-looking, pale yellowish, with a long black horn, curved in different individuals at different angles, and, in one case, in which I took deep interest, bifurcated half its length, and very odd in appearance; unfortunately the owner promptly died, as did three others, apparently without feeding much. The rest took well to *C. arvensis* and white garden convolvulus, at first riddling the leaves with holes, after the habit of the larva of *Hemaris fuciformis* on honeysuckle, and later eating at the side. They speedily developed a green tinge, and, by October 4th, were ⅜ inch in length, and laying up to moult. By October 6th, all four had moulted, but one died without eating. The three survivors were very lethargic, but irritable when disturbed or even breathed upon, throwing themselves off their food, and twisting angrily about. They were now pale green, slender larvæ, developing a darker stripe down the back as they grew, and having a somewhat rough shagreened appearance; the horn still large in proportion, black and slender; two pairs of anal spiracles, large black ovals, the others represented by black dots. They grew steadily to ⅝in. with no change in colour except the horn, which turned reddish, and by the 12th were laid up for their second moult, which they accomplished on the 14th by midday. In this instar they were still light green, ribbed closely and shagreened with whitish points, segmental divisions paler, and a broad darker green stripe down the back; spiracles large, especially the two anal pairs, whitish, edged with deep black; horn blackish-brown, paler at base; head green, shield-shaped, and in one case with a black streak down each side. By the 18th, faint, oblique, pale streaks, edged above with darker green, developed along the sides, and a faint row of false spiracle-looking markings above the true spiracles; claspers dusky. The next day they were exactly 1 inch in length, and had laid up for their third moult by midday, and on the 20th one was in its fourth instar, and the others by 8 a.m. on the 21st. Progress was now very rapid, and, by the following day, they were 1½ inches long, and no longer so slender in proportion, ground colour green still. One, however, was very handsomely marked with a broad purplish-black stripe along the back, broken up on each segment with a green kite-shaped marking, the point towards the head; along the sides on each segment was a black oblique stripe, edged below with paler green running up to the black dorsal marking, the spiracles large and of a bright orange colour surrounded by black; horn green below but black above, shading to green at the tip, the whole surface being dotted with white; head green, with black edging and black streak down each lobe. The other two were without the dorsal marking and much plainer in appearance. Anal pair of claspers green, with black edging, the others black outside but green underneath; prolegs black. By the 25th they were nearly 2 inches long and eating large quantities of *C. arvensis*, which they seem to prefer. As an experiment I now tried a leaf of lettuce, which is recorded as a foodplant in Madiera, but they would have none of it, and stuck to the *C. arvensis*. In Barrett's *Lepidoptera*, vol. ii., it is noted that "this species does not appear to assume the Sphinx-like attitude so common in its allies," but I have several times seen them resting with head thrown back, though usually they lie straight along the stems when not feeding. On October 26th, all three were laid up by midday for their fourth moult, length 1¾ inches. This proved a more protracted operation than previous moults, since none had finished till 8 a.m. on the 28th, when the first was in its fifth instar, the second by 1.15 p.m., and the third by 10 p.m. The following day they had all assumed the adult colouring, which has been already described and figured, and into which I, therefore, need not go.—JAMES W. CORDER, Ashbrook Terrace, Sunderland. *October* 30*th*, 1903. [The larvæ fed up to full size, became 4in. in length, and have now been down for some days.—J. W. C. 21/11/03.]

NOTE ON THE EGG OF COSSUS COSSUS (LIGNIPERDA).—Height about 1·5mm., diameter 1mm. The eggs appear to be laid either in short rows, end to end, or in little heaps. Each separate egg is very characteristically intermediate between an "upright" and "flat" egg. It has the characteristic oval outline of a flat egg, but with the micropylar end rather wider than its nadir, looked at in the direction of its long axis, whilst, looking down upon the micropyle, one finds that it is circular in outline with a well-defined micropylar area and ill-developed longitudinal ribs leading up to the micropyle. The egg is very distinctly parti-coloured, the basal half (treating it as an upright egg) being of a pale creamy-white in tint, the upper half strongly mottled with dark brown. The basal area is somewhat flattened, as if it might be sometimes laid on end and that this was done sufficiently often to give it a marked impress in this direction, whilst some 24-28 longitudinal ribs are recognisable, but so closely crossed by transverse ribs at right angles as to almost destroy their character. About twelve of the ribs come over the shoulder of the egg and die off in the micropylar depression at the apex. The micropylar area is well-defined, the micropyle central and forming a small stellate depression. [Described under a hand lens July 3rd, 1903, from eggs laid by a ♀ taken at Westcombe Park. A part of the batch laid was forwarded to Mr. Bacot, who will report on the eggs later. The difficulties attending the Cossid egg have already been pointed out, *anteà*, vol. xii., pp. 317-8.]—J. W. TUTT.

NOTES ON EGGS OF LEPIDOPTERA.—The following notes, made whilst away from home, and without any proper appliances for making detailed descriptions, are simply intended to supply certain lacunæ in our knowledge until more satisfactory descriptions are available. After dealing with them I posted the eggs on to Mr. F. Noad Clark for the purpose of photographing (but have since heard that at the time of their arrival Mr. Clark was from home, and by the time he had returned most of them had hatched). The eggs were all examined under a two-thirds lens used as an eyeglass:—

Œneis aello.—The egg is upright, circular in transverse, almost oval in longitudinal, section, but rather flattened at base. Height: width as about 5 : 4. Pale pearly-yellow (almost pearly-white) in colour, with the micropylar area very distinctly marked off at the apex of the egg. The longitudinal ribs, eighteen in number, are very distinctly marked, shining almost like silver in reflected light, and appear to be wavy, this appearance being probably due to a number of inconspicuous transverse ribs which seem to surround the egg and cross the longitudinal ribs; only in one instance do two of the longitudinal ribs unite before passing over the shoulder of the egg, most of them running quite separately over the shoulder, ending, as ribs, on the margin of the apical area; on the apical area they appear to break up into series of raised points, finally forming a sort of ring round the micropyle proper at the summit of the egg. [Described on August 17th, 1903, from an egg obtained by dissection of the body of a ♀ captured the preceding day at Arolla.]

Epinephele lycaon.—Yellow, inclining to orange, in colour; in shape a truncated cone, rounded at the bottom; height, very little more than diameter; 20 or 21 well-defined longitudinal ribs, extending from base over the shoulder of the egg; apical area flattened, with a depressed ring just within the termination of the longitudinal ribs; the central area somewhat articulated, the immediate area around the micropyle slightly raised; no transverse ribs to be detected with the power at disposal. [Described August 15th, 1903, from eggs dissected from body of a ♀ taken at Useigne, August 13th.]

Melampias melampus.—The egg is upright, of a pale creamy tint, circular in transverse, and somewhat oval in longitudinal, section, but rather broader at the base than at the apex, which is somewhat flattened to form the micropylar area. Several (about 28) fairly-marked longitudinal ribs run from apex towards shoulder, where many anastomose, chiefly in pairs, and curve round into the apical area; this area (around the micropyle proper) appears to be minutely pitted, but the structure of the micropyle is not to be made out under the power at disposal. [This note was made August 10th, 1903, from an egg obtained by dissecting a ♀ captured at Arolla on August 8th.]

Erebia mnestra.—The egg is upright, plump, somewhat cylindrical (perhaps more like a truncated cone, with the base but little wider than the apex), the height about equal to the diameter; of a pale yellow colour; the surface shining and covered with many exceedingly fine longitudinal ribs, of which (with the power at disposal) I make about 42 at the widest part; these anastomose somewhat towards the apex, and end, as ribs, just over the shoulder of the eggs. The apical area of the egg appears to be somewhat pitted, the part immediately surrounding the micropylar rosette being fairly smooth. Between the longitudinal ribs are many faint transverse ribs, giving the familiar latticed appearance noticed on the sides of this and so many other eggs. [The eggs described were obtained by the dissection of a ♀ captured on August 9th, 1903, at Arolla. The description was made on August 10th.]

Melitaea didyma.—The egg is upright, of a bright green colour, somewhat conical in outline; the height: width as about 4: 3, but with considerable variation in size. There are a number (? 18) of distinct longitudinal ribs, extending from the base to the shoulder of the egg, where they anastomose, and finally form a distinct ring surrounding a flattened apical area; the structure of the micropyle is not to be made out with the power at disposal. The base is flattened, and apparently somewhat depressed. [The eggs from which this description is made were laid in a heap in a collecting-box by a ♀ taken between Useigne and Evolène, on July 28th, 1903, and were described on August 7th.]

Brenthis pales.—The egg is upright, of a pale orange colour, finely ribbed from base to apex. It is conical in outline, tapering to a somewhat blunt point, on which is placed the micropylar rosette. The ribs appear to be about twenty in number, several of them anastomosing before reaching the shoulder of the egg. [This note was made on August 10th, 1903, from an egg obtained by dissecting a ♀ captured the preceding day at Arolla.]

Argynnis niobe.—The egg is upright, very small for the size of the insect, bright orange in colour, conical in shape, the height little more than the width, and tapering rapidly towards apex; fourteen very distinct and well-marked longitudinal ribs, extend from base to apex, ending in a small depressed area at the summit around the apical area; this area is somewhat flattened, and contains the median micropylar rosette in its centre. Between the longitudinal ribs are a number of fine transverse ribs (or striations) that do not appear to cross the summits of the longitudinal ridges, which seem to be somewhat sharp-edged. The longitudinal ribs mostly anastomose in pairs near the shoulder of the egg, and their apical terminations unite to form a raised wall surrounding the micropylar area. [Described August 10th, 1903, from an egg obtained by dissecting a ♀ captured at Arolla on August 9th.]

Plebeius argyrognomon (*argus*).—The egg is bright green in colour, circular in outline, forming a flattened disc about one-half the height of the diameter; the surface appears to be covered with minute rough points, closely set over the whole surface, and giving one the impression that the egg is thickly pitted. Medially at the apex is a minute micropylar depression, the structure of which cannot be made out with the power at disposal. [This note was made on August 10th, 1903, from an egg obtained from a dissected ♀ taken at Arolla on August 8th, *1903.]*

Syrichthus alveus.—Base quite flattened ; shape about three-fourths of a sphere, somewhat flattened at the apex; pale yellowish in colour, with the slightest possible green tinge ; with 22 longitudinal ribs reaching from base to apical area, 7 pairs anastomosing just above the shoulder of the egg, the ribs somewhat acutely-edged, but showing distinctly the very numerous fine transverse ridges that surround the egg from the base to the edge of the apical area. This latter consists of a well-marked but minute circular depression within the terminations of the longitudinal ribs ; medially in this there is a distinct raised micropylar stella. [Eggs described August 18th, 1903, dissected from a ♀ captured at Chamonix the same day.]

Pamphila comma.—The egg is hardly more than a hemisphere, the base quite flattened, the apical area depressed, the micropyle forming a raised point in the centre of the depression; the colour is, when newly exposed, pearly-white, but it changes almost directly to a shining chalky-white, the apical depression alone retaining the paler coloration. The whole of the surface of the egg is minutely pitted, and, under a lens, has the look and apparent texture of the shell of a hen's egg. There is no trace whatever of longitudinal or transverse ribbing, and the egg is as dissimilar as possible from that of the well-ribbed egg of *Syrichthus alveus*, with which it was compared. [Eggs described August 18th, 1903, dissected from a ♀, captured at Chamonix the same day.]

Lithosia lurideola.—The egg is of a pale pearly-yellow when laid, becoming of a more or less transparent pearly-grey as the embryo is matured; it is almost hemispherical in shape, the surface shining and somewhat iridescent, with a suspicion of minute surface pitting, under an ordinary hand lens. No trace of the micropylar structure can be discerned with the power at disposal. The eggs are laid in little batches side by side, and touching each other. [The eggs described on August 10th, were laid in the collecting-box by a ♀ obtained at Useigne on July 28th, 1903, and described August 10th.]

Lithosia lutarella (the typical golden-coloured mountain form).—Pale pinkish or flesh-coloured in tint, rather more than a hemisphere in shape; what should be normally the base occupied by a deep circular depression, which appears to have the same kind of surface structure as the rest of the egg; this surface-sculpture appears to consist (under power at disposal) of exceedingly fine pits (it might be an exceedingly delicate reticulation under a higher power), but I am not able to make out any ribbing. The surface is exceedingly shiny, and the bright areas (due to reflected light) obscure any minor detail that may be present. I was astonished to find that the eggs were laid loosely, although having the characteristic shape and appearance of the allied eggs that are attached. Those described were laid by a ♀ captured at Haudères on July 29th, 1903, *in cop.*, which laid during the following days a few eggs each day, up to and including August 11th, when the ♀ still appears to be lively and healthy, and capable of laying many more eggs. The description was made on August 7th.]

Œnistis quadra.—The eggs are laid most regularly side by side in large batches. The eggs are exceedingly small for the size of the moth, and of a pale pea-green colour. The egg is somewhat less than a hemisphere, considerably flattened at and towards the apex, covered over with small but conspicuous pittings. The micropylar point appears to be raised, and, for some distance around it, there appears to be an exceedingly shallow depression where the sculpturing is typical. The examination of two loose eggs showed a depressed base very like that already described in the unattached eggs of *Lithosia lutarella* and *Callimorpha dominula*. Examined under a lens, the green colour of the egg appears to be confined largely to the central area of the contents, the rest of the shell being largely transparent, and, looked at against the light, the sculpturing appears to be quite spiny and echinoderm-like. [Eggs laid August 22nd, 1903, and following day by a ♀ taken at light at Chamonix on the evening of August 19th.]

Callimorpha dominula.—The egg is rather more than a hemisphere in shape; of a pale green colour; the surface shining, and apparently almost smooth. (There are suggestions of an exceedingly fine pitting that might be seen under a higher power.) There are a number of comparatively pale areas within the egg, possibly due to embryonic development, otherwise there are no traces of markings, sculpturing, &c. The base flattened and depressed, shining, and apparently of similar structure to the rest of the egg. The egg retains its green colour until the time of hatching. [The eggs described were laid loosely in a box on July 29th, 1903, by a ♀ captured at Useigne the preceding day; and were it not for our knowledge of the similar structure of the egg of *L. lutarella*, we should be inclined to think that the flattened (depressed) base might indicate that the egg was normally attached. The similar structure of the bases of these eggs, smooth, shiny, and depressed, leads us to assume that this egg is really laid loosely.]

Nemeophila plantaginis.—The eggs are laid side by side, touching each other, in batches of varying size, from 20 to 50 (or more) in number. Each egg forms rather more than a hemisphere, is of a pale pearly-yellow colour, the surface smooth, shiny, and apparently quite polished; the base is flat, and the curvature at the apex appears to be quite regular, without any apical depression. At the summit of the egg, an almost transparent area occupies the greater part of the apex. The eggs in about two days become bright green in colour, then, as the embryo matures, they become grey, gradually deepening in tint until they are of a dark slaty-grey, which is maintained until hatching takes place. The oval stage lasts fourteen days. [The eggs, laid August 9th, 1903, by a ♀ caught at Arolla, were described on August 10th.]

Lymantria monacha.—The eggs are of a pale brownish or faint chocolate colour; about three-fourths of a hemisphere when laid, but flattening at the top, until they assume the form of a tangerine orange; the surface is almost smooth but tends to be dull, the dulness apparently due to what seems to be a number of exceedingly minute microscopic pits. [The eggs were described on August 10th, 1903, and had been laid on August 1st by an unfertilised ♀ that had emerged from a pupa found under some dead pine-needles, on a rock at Useigne four days previously.]

Xylophasia lateritia.—What must, I think, be considered as one of the most highly-specialised Noctuid eggs, with regard to size, is that of this large *rurea*-like Noctuid, which appears to be widely distributed throughout the lower Alps. The egg is, for the size of the moth, of remarkably small size, of a pearly-white colour (with the slightest yellow tint), smooth and shiny surface, with numerous minute, closely-set longitudinal ribs from base to apex, crossed with still finer transverse ribs. The egg, although roughly of typical Noctuid shape, is very depressed and flattened. The dissection of a ♀ showed the body to be quite full of these minute eggs, with scarcely a trace of any other structure, except the walls of the ovaries in which they were contained, being discernible. The whole of the eggs, those nearest to, as well as those most distant from, the ovipositor, appeared to be of about the same size, and to have reached about the same stage of development, except that those more remote were, perhaps, rather smoother, due to the ribs being very unpronounced, owing probably to the more fluid condition of the eggs. [This note was made August 19th, 1903, from eggs dissected from the body of a ♀ captured at light at Chamonix on the evening of the previous day.]

Tanagra chaerophyllata.—The eggs are bright green when first laid, and, with the exception of a faint paling, appear to maintain this colour for a considerable time. The egg is very remarkable in shape, and differs from the normally oval Geometrid egg, in so far as, at the time of laying, there is a deep longitudinal depression running up the whole length of one side of the egg, and making it exactly like a grain of wheat in shape. One pole (? micropylar) is flattened, its nadir rounded. Under power at disposal, the egg appears to be smooth, but one suspects that, with a stronger power, a surface-sculpturing would be detected. [The eggs, described on August 7th, were laid on July 29th, 1903, by a ♀ taken, *in cop.*, at Haudères the preceding day, when, between 8 a.m. and 8.30 a.m., large numbers of paired examples were observed resting on the grass in the fields between Evoléne and Haudères.]

Gnophos glaucinaria.—(1) The eggs are almost perfectly oval in outline; the length: breadth as about 7 : 5. The upper surface shows a very large oval depression occupying the greater portion of this area of the egg, reaching, however, a less distance towards the micropylar end than to its nadir. The egg is covered with longitudinal rows of minute cells, which give it a very beautiful appearance, the apical area reminding one, as much as anything, of the end of a thimble. When first laid the eggs are, I believe, pale yellow (I unfortunately have no note), but rapidly become of a pale crimson tint to the naked eye, the colour appearing somewhat weaker, bright rose-pink, when examined under a lens. [The eggs, described on August 10th, 1903, were laid by a ♀ obtained on August 2nd at Arolla.] (2) A flat egg, almost oval in outline, but with the micropylar end somewhat broader than its nadir; the length to breadth as about 7 : 5; very pale yellow in colour when first laid, but already (within twelve hours of being laid) changing to orange. The surface is covered by a number of longitudinal ribs crossed by numerous exceedingly fine transverse ones, which divides into a number of shallow little cells, the bottoms of which are very shiny; an oval depression forms on the upper flattened surface of the egg; the micropylar end of the egg is also pitted with shallow cells (resulting in much the appearance of the top of a thimble), but the micropylar structure cannot be made out with the power at disposal. (The fact that the lid of the box did not fit tightly on the rim of the box itself led the ♀ to push many of her eggs round the rim of the box, and this leads one to suppose that she may push the eggs into crannies in nature, but there is no pressing out of shape, and some eggs are attached to the side of the box, which makes the suggestion quite problematical). [Described August 19th, 1903, from eggs laid the preceding day by a ♀ captured on the Brévent.] The eggs rapidly become brighter orange, and in the course of two days exhibit quite a red tinge, due to crimson speckling, the colour finally becoming quite bright red, August 23rd, 1903. [These descriptions were made independently, under the idea that the females belonged to different species.]

Gnophos obfuscata.—The eggs, which I believe were bright green when first laid (I unfortunately have no note), are oval in outline, and narrower at the micropylar end than at its nadir. The length : width as about 5 : 4, and there is no marked depression on the upper surface of the egg (at first sight, therefore, the egg appears to be very different from that of *G. glaucinaria*). The surface is covered with longitudinal ribs (from micropyle to its nadir), crossed by numerous rings of transverse ribs, giving the sculpture a latticed appearance, and showing series of ladder-like pits extending from the micropylar area to its nadir. The apical area is of a beautiful purple colour (largely due to reflected light), the micropyle itself being very distinct, and surrounded by a roughly polygonal or quadrangular reticulation, the termination of the ladder-like sculpture with which the surface of the egg is covered. (The egg suggests to me grave doubts as to whether this species and *G. glaucinaria* can possibly belong to the same genus; close comparisons of larvæ and pupæ are very desirable.) [Described August 10th, 1903, from eggs laid by a ♀ captured at Arolla on August 2nd.]

Acidalia contiguaria.—The egg is flat, oval in outline ; the length : breadth as about 5 : 4 ; the upper surface irregularly depressed, generally the depression is less marked towards the micropylar end than towards its nadir ; the surface is covered with minute pits, apparently arranged in regular longitudinal series (but this is difficult to make out with the power at disposal). The colour (which, I believe, is pale pearly-yellow when first laid, although I unfortunately have no note) changes slowly to a pale orange, gaining its full tint about a fortnight after being laid. [The eggs described were laid on July 29th, 1903, and following days, by a ♀ captured the preceding day at Useigne, the description being made on August 10th.]

Acidalia fumata.—Really a flat egg, somewhat oval in outline, but with blunt ends, making it almost cylindrical ; length : breadth as about 4 : 3. The egg is usually, however, laid on one of the small ends, in the same manner as an upright egg, with the micropyle at the apex. It is of pearly-yellow colour, finely ribbed (14 to 16 ribs) longitudinally, *i.e.*, from the micropylar area to its nadir ; a large number of exceedingly fine parallel ribs appears to surround the egg between the longitudinal ribs. The longitudinal ribs appear to end on the shoulder, the flattened apical area being strongly pitted right up to the micropylar rosette (a few of the eggs are laid as flat eggs, and in such eight ribs can be counted on the upper surface). After a few days the eggs become irregularly spotted with crimson. [Eggs laid at Arolla on August 5th, 1903, described on August 10th ; the crimson-spotted eggs were laid some four or five days earlier than this.]

Acidalia incanata.—The eggs are laid as upright eggs. Each is like a ninepin set upside down (on its point), *i.e.*, the micropylar end is much larger, broader, and flatter than its nadir, which serves as the base of attachment. The egg is yellow in colour, and, as far as can be made out with the power at disposal, has some 18 longitudinal ribs medially, some of which, however, anastomose, so that only about 12 appear to run over into the micropylar depression. The longitudinal ribs are crossed by a large number of fine, closely-set, transverse ribs, giving the egg a honeycombed appearance. The basal area appears to be pitted rather than ribbed (so far as an examination of several unattached specimens can be trusted), but the apical area has, except for the micropyle itself, much the same sculpture as the long sides. [Eggs laid by a ♀ taken at Chamonix, August 18th, 1903, and described the next day.] By August 25th the eggs were beautifully speckled with crimson. They commenced to hatch on August 31st, 1903.

Larentia didymata.—A number of eggs laid loosely in a box (whilst the ♀ was under the influence of ammonia in the lethal box). The eggs are almost perfectly oval in outline, the length to breadth is about 5 : 4, some eggs (the next morning) distinctly yellow, others quite pea-green; surface shiny and apparently quite smooth, at any rate, under the power at disposal, no sculpture can be made out, nor does there appear to be any difference between the shape of the micropylar end and its nadir; there are no irregularities, no depressions, and the eggs roll quite freely on a smooth surface. [Eggs laid during the night of August 18th, 1903, by a ♀ taken at Chamonix, described on the morning of the next day.]

Larentia parallelolineata, Retz. (*vespertaria*, Schiff.).—The eggs are laid loosely in a box, of a bright yellow colour, roughly oval in outline, but somewhat flattened at what appears to be the micropylar end, which, although fuller, is somewhat narrower than the nadir. The surface is shiny, apparently smooth, with a marked irregular depression, varying in size, occupying the greater part of the upper surface of the egg. [The eggs, described on August 25th, 1903, were laid by a ♀ caught at Chamonix on August 19th, and had been laid during the two or three preceding days. The ♀, although full of eggs, was very chary of laying them in confinement, and only deposited fourteen, dying on the 25th.]

Larentia subtristata.—The egg is flat in outline, becoming considerably depressed on the upper surface at the end more remote from the micropyle; the micropylar end much fuller than its nadir, giving even a flatly-laid egg the appearance of being raised. The surface appears to be somewhat dull, and there is no trace of sculpture to be seen under the power at disposal. Some of the eggs are laid singly, others in small batches of four or five, when laid closely thus they are sometimes really slightly raised, *i.e.*, the micropylar end is somewhat lifted from the plane on which the egg is deposited. [The eggs, described August 25th, 1903, were laid by a ♀ that flew into a railway carriage on the night of August 21st, at Pontarlier.] —J. W. T.

NOTES ON COLLECTING, Etc.

CHARAXES JASIUS, EPINEPHELE NURAG, PAPILIO HOSPITON, ETC., AS CORSICAN INSECTS.—I should like to confirm what Mr. Rowland-Brown says (*anteà*, p. 247) about the curious non-appearance of *Charaxes jasius* in Corsica and Sardinia. Having taken *C. jasius* in the shape of egg, larva, pupa, and imago on the Esterel several years following, I expected to find it in abundance in Corsica, where the *Arbutus unedo* is, perhaps, the commonest of all the shrubs forming the Maquis. However, on a visit to Corsica last Easter, at the very best moment for picking up larvæ of *C. jasius*, I was unable to find a single example. Moreover, having visited the collection of the late Mr. Marshall at Ajaccio, I found only a pair of badly worn and chipped insects of doubtful origin. The pitiful local collection of Ajaccio knows not *C. jasius.* I have, however, seen two examples that were found in Corsica by a friend of mine. The question arises, if two, why not many, given foodplant in abundance and temperature *ad hoc*? Mr. Rowland-Brown doubts whether *Epinephele nurag* be an inhabitant of Corsica. I found a solitary ♂ near Bonifaccio. I expect Mr. Rowland-Brown was rather too late and rather too early for *Papilio hospiton.* I found a fair number, especially at Pianottoli, where, on the top of a little hill belonging to the tavern-keeper there, I netted seven in half-an-hour's work before lunch. Their flight is remarkably rapid and jerky, much more so than that of *P. machaon.* Everywhere I found *Ocnogyna corsicum* in abundance, flying along the dusty roads, in the valleys, and at Bocognano and other mountainous and cold regions, settled torpid in the midst of the dust itself. The commonest insect was *Pararge* var. *tigelius*, that simply swarmed everywhere. I only found a few worn and chipped last year's imagines of *Aglais ichnusa*, and saw no sign of larvæ.—P. A. H. Muschamp, 20, Ch. des Asters, Geneva. *October 19th*, 1903.

Abundance of Apaturids near Lausanne.—On July 20th, in a little wood near Lausanne, I made what I should think to be a record catch of Apaturids in one long morning's work. I netted in all 70 *Apatura iris*, 42 *A. ilia*, and 17 *A.* ab. *clytie*, in decent condition, and I must have thrown away about as many chipped ones. In addition, I took what I am given to understand is a great rarity here, five *A.* ab. *iole* and seven transitions. These, with two *Limenitis populi*, ♀ s, and a number of *L. sibilla*, and our commoner Argynnids, with a couple of *Micropteryx aureatella*, completely loaded me, and I returned without trying what the afternoon hunting might be worth.—Ibid.

Extended pupal stage of Petasia nubeculosa.—Last year I mentioned that I had two pupæ of *Petasia nubeculosa* that had been in that stage since 1898. Imagines emerged from these in March last, a ♂ on March 18th, and a female on March 21st, 1903. Both were perfect insects. They had existed as pupæ through five winters. I may mention that one or two of the same brood have emerged each year—omitting 1899.—G. O. Day, F.E.S., Knutsford.

Habits of Sciaphila penziana.—I should be much obliged for exact details as to the foodplants of the larva of *Sciaphila penziana*, and the time of year at which I could find the larvæ, as I should like to try to breed it. It is fairly numerous in its very restricted locality here, and on one evening last August I found over 20. I had an idea that the larvæ fed on lichen growing on rocks, but I find all the newest specimens on stones on the slopes below the rocks, and about the end of their time of appearance, when they are getting worn, they are *mostly found on* the rocks at all heights. I found one example drying its wings, the nearest vegetation to which was a dark rough moss and the little mountain *Galium*—no lichen at all—whilst I found a pupa-skin within three inches in a little tuft of moss.—H. A. Beadle, 6, Station Street, Keswick. *November 17th*, 1903.

Agrius convolvuli in the Isle of Man.—It may be of interest to record that Dr. Cassal caught, during September last, five examples of *Agrius convolvuli* at a tobacco-plant in his garden at Ramsey, and I also had a fine one brought to me which was caught in a glasshouse at Marathon, at the residence of the high bailiff.—H. Shortridge Clarke, F.E.S., Douglas, Isle of Man. *November 16th*, 1903.

Pyrameis cardui in London.—Mr. Pickett's record of this immigrant for the "heart of the City" (*anteà*, p. 294) reminds me that on Saturday morning, October 10th, I saw one flying along Queen Victoria Street, close to St. Paul's Station. It seemed somewhat feeble, and no wonder, if what I witnessed was a fair example of its recent history; for in the brief minute in which I was within sight, I saw two lads successively make violent onslaughts with their caps. This species and *Plusia gamma* were both fairly common at Chingford on September 23rd.—Louis B. Prout. *November 16th*, 1903.

Notes on the partial doublebroodedness of Abraxas grossulariata.—Referring to my note (*anteà*, p. 21), I paid periodical visits to observe the pupæ left in the garden, and I noted that most of them were still alive on January 26th, this year. They had survived a fortnight of very severe weather in the early part of the month, when the thermometer registered from 8° to 14° of frost. A subsequent period of cold weather, however, proved fatal to them, and on examining the pupæ in April they were all dead. I do not think that these advanced broods ever attain the imaginal stage in nature, and certainly not in a climate such as obtains in Manchester, but having regard to the fact that if encouraged with a little gentle warmth when brought indoors, they complete their destiny with apparent ease, it appears possible that in certain mild and sheltered situations in the south, there might be instances of the emergence of a second-brood. Have any of your readers had experience on this point?—B. H. Crabtree, F.E.S., The Acacias, Levenshulme. *November 18th*, 1903.

Further queries about Plume moths.—In Mr. Dalglish's excellent list of the lepidoptera of the Clyde valley, neither *Pterophorus monodactyla* nor *Alucita pentadactyla* appears. Are these two species really absent throughout the district? Similarly in Mr. Reid's list of the lepidoptera of Aberdeenshire and Kincardineshire, *P. monodactyla* does not appear; yet Mr. Cheesman says that it is common in Orkney. Is not this species generally distributed throughout Scotland? In Mr. Day's new *List of the Lepidoptera found in Cheshire*, etc., there is a record of *Oxyptilus hieracii*, from Bidston, by Brockholes. *O. teucrii* used to be called *O. hieracii*. Has Mr. Day any reason to believe that Brockholes ever captured (or even knew) the true *O. hieracii*? In this list also Mr. Day separates *Stenoptilia bipunctidactyla* and *S. pneumonanthes* (*plagiodactylus*). Is there any difference between these insects in Cheshire, and can Mr. Day give us the evidence on which it is assumed that *S. pneumonanthes*, Schleich, occurs in Cheshire? Mr. Daltry's excellent *List of the Macro-lepidoptera of North Staffordshire* oes not include the plumes. Can any entomologist supply us with list for the county?—J. W. Tutt.

Pyrameis cardui at Selby.—*Pyrameis cardui* has appeared in some numbers here this autumn. I saw some 20 or 30 specimens on the move on September 27th and 29th, and a few specimens have visited my garden. The species has not appeared here in more than twos or threes since I came to live here in 1893.—(Rev.) C. D. Ash, B.A., Skipwith Vicarage, Selby. *November 16th*, 1903.

Polia nigrocincta at sugar.—Is it a common thing everywhere for *Polia nigrocincta* to be taken at sugar? I have enquired of friends, have looked through several volumes of entomological magazines, and have corresponded with Mr. Murray, of Carnforth, who says he has collected the species for over twenty years and never took a specimen at sugar, so that the habit would appear, at any rate in some districts, to be unusual. I spent a fortnight at the Isle of Man, *viz.*, the second and third weeks in September, and on four nights I took the species at sugar, one on the first night and five the next; ten were taken in all, then the wind changed to the east and I saw no more.—H. A. Beadle, 6, Station Street, Keswick. *November 10th*, 1903.

CURRENT NOTES.

Thanks largely to the enterprise of German and British lepidopterists, we have now a very fair knowledge of the distribution of the butterflies of the Central Alps of Europe, yet so hopeless is it to get the greater number of the collectors who work in these districts, or even the resident collectors, to capture the Heterocera they meet, and publish the results of their work, that little or nothing is forthcoming beyond what Frey has told us of the distribution of the moths of Switzerland, and we have no list worth considering of the moths of the alps of nothern Italy, of south-eastern France, &c. This is the more to be regretted because certain superfamilies of moths, *e.g.*, Alucitides (Pterophorides), Anthrocerides, Psychides, Crambides, Pyralides, &c., are to be collected in numbers by the usual straightforward methods in use for the capture of butterflies, and form but little addition to one's bag. As we get farther east, however, even the butterflies have been comparatively little worked, and it is much to the credit of Dr. Rebel that he has brought together the collecting notes scattered through the British and German periodicals, added these to his own personal captures, and produced such an excellent paper as that entitled "Studien über die Lepidopteren fauna der Balkenländer,"* comprising the fauna of Bulgaria, East Roumelia, Servia, Hercegovina, Roumania, Greece and Asia Minor. It includes the moths as well as the butterflies, and, if the records of the former appear scrappy and incomplete, they must form an excellent standpoint from which future collectors can view their work. Dr. Rebel has included all the details published by Mrs. Nicholl and Mr. Elwes, but Miss Fountaine's important paper on the butterflies of Greece appears to have unaccountably escaped the search-net, a fact, the more remarkable that only two authorities are quoted for this country, but, perhaps, after all, this is intentional the district covered, not exactly coming within the area treated. We should like to enter into details, but it is essentially a paper for all our butterfly-hunters, who take the continent of Europe, or the whole Palæarctic area, for their field of operation, to have by them for continual reference, that attention need here only be drawn to its publication.

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* *Annalen des k. k. Naturhistorischen* Hofmuseums, Wien, xviii., pp. 123-347. *pl. iii.* *Published* by Alfred Holder, 1, Rotenturm-Strasse 13, Wien.

The Hon. N. C. Rothschild adds (*Ent.*) a new flea to science, *Ceratophyllus dalei*, which was taken from a nest of *Columba palumbus*.

The late Frederick Smith was inclined to believe that a species of *Polistes* wasp captured at Penzance, London and Liverpool, in 1866 and 1867, was imported with hides from South America, the wasps having been observed following a ship in the river La Plata, being attracted by the raw hides; now Dr. Knaggs assumes (*Ent.*) that the specimens of *Plusia ni*, taken in Cornwall the last few years, are referable to *Plusia brassicae*, which he says is common in Brazil and other parts of South America, further, it is his opinion that *P. ni* came over in the "hide" vessels with the *Polistes*, and that this is much more likely than that Cornwall, Devon and Dorset, with their well-known remnants of a Mediterranean fauna and flora, have received specimens from the south of Europe. He assumes that the capture of Miss Carne's specimens in May, showed that the insect was double-brooded, and had been bred in this country. We wonder whether the arrival of immigrant *Colias edusa*, *Pyrameis cardui*, *Manduca atropos*, etc., in May and June, will be held to prove that these examples were bred here, or whether immigrant *Plusia gamma* come over among raw hides. Those who know *Plusia ni* in its delightful haunts in France and Italy, may perhaps be allowed to doubt that *Plusia ni* has any great liking for hides. The wasps, perhaps, use the remnants of flesh on the hides for food, the moths, we opine, do not. We further wonder if well-informed lepidopterists would be surprised to know that the larvæ of *P. ni* have a vegetable diet, that the cocoons are usually spun up among the foodplant, that the pupal and imaginal stages of *P. ni*, each last from two to three weeks, that these are the only stages in which these species could come over in raw hides, and that ships that bring hides from La Plata take some little time to do the journey!

A notice of the *Transactions of the City of London Entomological and Natural History Society* for the year 1902 has quite unfairly been put aside for some time. The volume does considerable credit to that small but very active society. A paper by Mr. Alfred Sich, on "Observations on the early stages of *Phyllocnistis suffusella*," is a most thorough piece of work, and it is quite clear that Mr. Sich is no ordinary observer of the smaller lepidoptera. Mr. A. Bacot's paper, "The importance of certain larval characters as a guide in the classification of the Sphingids," also takes its place as a valuable contribution to entomological science. Altogether different reading is Mr. W. J. Kaye's "After lepidoptera in British Guiana in 1901," which, nevertheless, is full of interest, and now and again an observation is made that should not be lost sight of. Smaller contributions are "*Stauropus fagi*," by Mr. A. W. Mera, and "An Easter holiday in South America," by Mr. A. F. Bayne. The reports of the meetings are clear and lucid, and contain many an interesting paragraph. A glance at the balance sheet shows that there was a balance of nearly £4 on the right side, so that it is evident that business at the "City" is also well conducted, and that the money difficulties of a few years ago have been surmounted.

On November 26th, Colonel Swinhoe invited a number of Fellows of the Entomological Society of London and friends to spend a social evening at his museum at 36, Addison Gardens. After his extensive collections of lepidoptera had been overhauled, he entertained the guests at an excellent supper, after which a most pleasant evening was spent. It is interesting to observe the kindly intercourse that is rapidly spreading among the members of our fraternity, which has for so long hitherto been dependent on the Entomological Club for its entertainment. The following, among others, were present :—Colonel Bingham, Colonel Pilcher, Drs. F. G. Drewitt and N. H. Joy, Messrs. A. J. Chitty, W. L. Distant, H. St. J. K. Donisthorpe, H. H. Druce, F. A. Heron, M. Jacoby, A. H. Jones, W. J. Kaye, H. Rowland-Brown, etc. Ill-health alone prevented us from being present in person on this occasion.

Mr. Lofthouse records the capture of *Xylophasia zollikoferi* at Linthorpe, Middlesborough, on September 26th last. Details of the previous captures of this species in Britain are given in "British Noctuæ and their Varieties," i., p. 71.

Mr. E. Saunders, F.R.S., has added *Corizus hyalinus*, Fab. (a Mediterranean species), to the British list, on the strength of a specimen taken by Mr. A. Beaumont, near Gosfield, in Essex.

Mr. Holdaway records (*Ent. Mo. Mag.*) the capture of another specimen of *Leucania loreyi*. This was taken at sugar on September 27th, 1900, at Torquay.

It is with the greatest regret that we have to announce that one of our oldest correspondents, The Very Reverend Canon Bernard Smith, who has for over half a century been priest at Great Marlow, died in October last, at the ripe age of 89. Also that Dr. Philip B. Mason, of Burton-on-Trent, one of the prominent members of the Entomological Club, and the possessor of one of the finest collections of British lepidoptera that has ever been made, and on which large sums of money have been expended, passed away on November 5th last.

REVIEWS AND NOTICES OF BOOKS.

THE BUTTERFLIES OF SWITZERLAND AND THE ALPS OF CENTRAL EUROPE, by George Wheeler, M.A. (London: Elliot Stock, 62, Paternoster Row, E.C. Price 5s., or interleaved 6s.)—Mr. George Wheeler's *Butterflies of Switzerland and the Alps of Central Europe* is a welcome addition to the very scanty literature of the British butterfly-hunter abroad. Dr. Lang's pioneer volume as a library contribution to our knowledge, is not for the knapsack, and much has been discovered which, fifteen or twenty years ago, was not available to the author. Mr. Kane's handier Manual also suffers somewhat from "anno domini," and a revised edition would, no doubt, witness the elimination of a few patent errors, and the addition of much that, by force of circumstances, is left unwritten. In the matter of nomenclature, however, we cannot honestly say that we think Mr. Wheeler has improved on either. The average collector—and we make so bold as to suppose that Mr. Wheeler addresses himself to this class particularly—does not care a dead mite for priority fancies. He asks for uniformity at any price, and, in the existing welter of opinions, will not bother his head about who misspelled a name first and stuck to it, and who either dared to correct the printer's blunder, or started a system of his own, necessitating a host of new divisions and subdivisions—all intensely interesting to the scientist, but actually repugnant to the field naturalist and the "mere collector," for whom the rose smells as sweet, whether it be called a rose or redescribed as var. *William-Allen-Richardsoni*. Following Staudinger's Catalogue, and the notable revisions of some palæarctic groups made by Mr. H. J. Elwes—both of which make for a less complicated state of things, though Staudinger sticks to some well-known fallacies—we might have hoped that Mr. Wheeler would have accepted what, for want of a better word, we may call the "standard" authorities, as known to the world which looks outside the covers of a British handbook. However, Mr. Wheeler prefers originality, and if it does not help to bring order to the confusion of tongues, in other respects his arrangement makes things no worse than they are. Two classes of collectors go abroad—the man with knowledge, who has decided to visit a certain locality for a certain purpose; the casual collector, who, finding himself with a butterfly-net in his possession, wants to know what he has caught. Mr. Wheeler's book presupposes at least a superficial knowledge of entomology, and is thus better adapted to meet the requirements of the first mentioned—those who know roughly what they want or have secured, but for the life of them are unable to determine species among their specimens. How does Mr. Wheeler assist? He gives the prevailing colour of the genus, and its distinguishing characters. From this he proceeds to the individual, again condensing the features which appear to distinguish it from the other members, if any, of its genus. Finally—and we think this by far the most valuable departure—he details the "directions of variation," and those who have wrestled with the Hesperiids, the Erebias, and the Melitæas will at once understand how useful these indications may be and the extent of diligent observation implied by a systematic search through even so limited a butterfly fauna as that inhabiting the district of the Central Alps. We have applied the test to some of the obscurer and more variable forms in our own cabinet. On the whole it works well, but in the case of the Hesperiids, Mr. Wheeler's distinctions do not appear to be sufficiently detailed. No doubt he suffers from the obscurity of the older authors, whose descriptions are notoriously at variance in this group, but until some one of our entomological anatomists definitely separates the species after the manner of the Erebias—though it must be by additional characteristics—the difficulty will remain. Collectors, too, are not disposed to extend the already sufficiently overcrowded variety department, and in some cases certainly, if making a change, it would have been better to sink the more specific var. into the vaguer ab. until the constancy of some of these departures from the type has been more fully established. Meanwhile, Mr. Wheeler has done wisely to include the entire alpine system of Europe, from the shores of the Mediterranean to the last outposts of the chain around Vienna. The majority of collectors, no doubt, are those who spend their vacations in Switzerland, but the names of the authorities seem to show a tendency, even on their part, to seek fresh fields outside the more limited, but no less abundant, Swiss fauna. Where to go for the rarer species will be a matter easy of decision for those who consult these pages, and even more valuable are the detailed records of appearance. In this connection, one or two notices of Swiss species are suggestive. The capture of *Nomiades melanops*, near Sion, by Mr. Elwes, in 1887, is an interesting instance of interrupted distribution, the nearest given locality to the Rhone valley being Digne; or is it to be supposed that, after all, *N. melanops* is but a highly specialised form of *N. cyllarus*, which occurs in the same region under precisely similar conditions of time and place? Then there is *Melitaea berisalensis*, ranked as a variety of *M. deione*, but, unless it can be proved that *M. athalia* and *M. deione* are one and the same species, the mere wing-markings can hardly be accepted as a determination one way or the other, especially if the larvæ, as has been stated, are practically indistinguishable. And is the form of *Hipparchia semele*, which occurs in the Alps, really var. *aristaeus?* If so, it would appear that the remarkable tawny Corsican variety requires a new name. Kane's Piedmont locality, too, for *Carterocephalus sylvius* seems extraordinary for what is usually regarded as a northern species altogether. In observing also that *Erebia epistygne* must—at any rate, in some years—produce a partial second-brood, Mr. Wheeler appears, like others, to have been misled by a passage in Mrs. Nicholl's article on the butterflies of Digne. Our own experience, and we believe it to be the experience of all entomologists, is that no *Erebia* has a second-brood, and that if any *E. epistygne* have been observed in July, these should be regarded as late stragglers of a retarded spring emergence. We have drawn attention to these points, however, rather to show the thoroughness which pervades Mr. Wheeler's work than to find fault. To those who carry a net abroad, this handbook will be invaluable as a book of reference, and in this spirit we can cordially recommend it to the collector, whether he takes his entomology in the serious and proper spirit of the observing naturalist, or is content to fill his cabinets rather with pretty souvenirs of pleasant rambles than with material for study and instruction.—H. Rowland-Brown.

OBITUARY.

Frederick Bates, F.E.S., etc.—We announce with deep regret the death of Mr. Frederick Bates, which took place at his residence, 417, High Road, Chiswick, on October 6th, in his 74th year. He was born at Leicester on November 18th, 1829, and spent most of his life in that town, or in the county, coming to London in November, 1896. He was a successful brewer, and his business was turned into a limited company, of which he was vice-chairman. He leaves a widow, three sons and three daughters, many grandchildren, and one great grandchild. It is needless to remind our readers that he was a brother of the late celebrated Henry Walter Bates, F.R.S., the originator of the theory of Mimicry. In his earlier days he was an enthusiastic collector of British coleoptera, much of his spare time being spent in studying the fauna of his native county. Later he became an ardent student of the *Heteromera*, doing much original work, and describing many new genera and species. The magnificent collection he formed of this family is now in the British Museum. For a time he took to the study of the fresh-water algæ, in which he became a master, but unfortunately he had to give it up on account of the injury it was doing to his eyesight. He also possessed a considerable knowledge on the scientific aspect of orchids. He again formed a very fine collection of British coleoptera, which he most generously presented to the writer, and of late years he took up the study, and amassed valuable collections, of the *Cicindelidae* and the *Rutelidae* of the world. He leaves two MS. papers on these families, one on the *Cicindelidae* unfinished, and the other, "A Revision of the Pelidontinæ," which is now in the hands of Mr. G. J. Arrow, of the British Museum, and at which he was working just before his death. He was elected a fellow of the Entomological Society of London in 1897, a member of La Société Entomologique de France, on February 26th, 1868, and into the Quekett Microscopical Club, on November 28th, 1884. He was also a fellow of the Royal Horticultural Society.

Through the kindness of Mr. Ernest Bates, his eldest son, we have been able to obtain the following list of some of his papers:—

Various notes on British Coleoptera in the *Zoologist* from 1849-1854.

"A Catalogue of the Coleoptera of Leicestershire," 1854; this was never published, but was read as a paper before the Leicester Literary and Philosophical Society by Mr. H. E. Quilter.

"Descriptions of New Genera and Species of Heteromera," *Trans. Ent. Soc. of Lond.*, pt. iii, September, 1868.

"Descriptions of New Genera and Species of Heteromera," *Trans. Ent. Soc. of Lond.*, pt. iv, December, 1868.

"Descriptions of New Genera and Species of Heteromera," *Ent. Mo. Mag.*, 1870, pp. 268-275.

"Descriptions of New Genera and Species of Heteromera," *Trans. Ent. Soc. of Lond.*, pt. iv, December, 1872.

"Notes on Heteromera and Descriptions of New Genera and Species," *Ent. Mo. Mag.*, vol. ix, pp. 97-99, 133-135, 149-152, 1872; 181-184, 201-204, 233-238, 1873. Vol. x, pp. 14-17, 45-52, 1873.

"Descriptions of New Genera and Species of Tenebrionidæ from Australia, New Caledonia, and Norfolk Island," *Trans. Ent. Soc. of Lond.*, pt. iii, August, 1873.

"Descriptions of New Genera and Species of Heteromera, chiefly from New Zealand and New Caledonia, together with a Revision of the Genus Hypaulax and a description of an allied New Genus from Colombia," *Ann. Mag. Nat. Hist.*, Series 4, vols. xii and xiii, 1873 and 1874.

"Notes on the Adelliinæ with descriptions of New Species," *Ent. Mo. Mag.*, vol. xvi, pp. 71-75, 131-133, 1879.

"Characters of the New Genera and Species of Heteromera collected by Dr. Stoliczka during the Forsyth Expedition to Kashgar in 1873-4," *Cistula Entomologica*, ii, February, 1879.

"Descriptions of New Genera and Species of Tenebrionidæ from the Island of Madagascar," *Trans. Ent. Soc. of Lond.*, pt. iv, December, 1879.

"On the Zygnemaceæ: A Chapter in the History of the Freshwater Algæ," *The Midland Naturalist*, vol. vii, 1884, p. 315.

"On Sexuality in the Zygnemaceæ," *Quekett Microscopical Club*, vol. ii, Series 2, No. 11, p. 104, 1885.

"The Fresh-water Algæ in the Flora of Leicestershire," issued by the Leicestershire Lit. and Phil. Soc., 1886.

"The Heteromera in the Scientific Results of the Second Yarkand Mission," 1890.

"The Coleoptera of Bradgate Park," Leicester Lit. and Phil. Soc.

Turning to other subjects, he was very fond of music, of which, though not a performer, he had a thorough knowledge, and in his younger days he possessed a very fine voice. He was very well read, a good Latin scholar, and could read French easily. His favourite works were those of Huxley, Spencer, and Darwin, and he possessed as complete a knowledge of, and insight into, philosophical subjects as any man living. We quote two passages out of an old pocket-book, written by him at the age of 21, which show more than anything we can write the fine character of the man:—"Xmas, 1850. . . . . This is the chief virtue of entomology, if the entomologist happens to possess a spark of genuine poetry within; it is a talisman, a blessed antidote to all viciousness, which he who possesses I do not think ever can become *radically bad.*" " . . . so here's for another pipe, and a hope to pass a right, happy, jolly good Xmas—may everybody. I am at peace with all the world—all happiness to every human creature." To show the respect in which he was held by all who knew him, we append the resolution unanimously passed at the Board meeting of the Leicester Brewing and Malting Company, Limited, held on October 20th last:—"That the directors of this company desire to place on record their deep regret at the loss they have sustained by the death of their late colleague, Mr. Frederick Bates, whose strong personality, business ability, geniality, and courtesy were so much appreciated by his fellow directors, and they further request the managing director to convey to Mrs. F. Bates and the other members of the family their deepest sympathy with them in their sad bereavement." On his tomb in Leicester will be written, at his own request, the three beautiful lines composed by Mrs. Huxley, and which are on her husband's grave:

> "Be not afraid, ye waiting hearts that weep,
> For still He giveth His beloved sleep;
> And if an endless sleep He wills, so best."

—HORACE DONISTHORPE.

ERRATUM.—Page 242, hint 6, for *germarana* read *roseticolana*.

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EXCHANGE BASKETS.—October 12th, 1903, No. **1** basket.—Messrs. Ovenden, Maddison, Studd, Day, Woodforde, Bower, Riding, Mera, Lofthouse, Fox, Robertson, Horne, Bowles. October 31st, 1903, No. **2** basket.—Messrs. E. Buckell, Atmore, Riding, Whittle, Walker, Studd, Adkin, Robertson, Ash, Woodforde, Bower. [Members who wished to be missed must write to the name preceding their own on list, not to the Secretary.] The names of one or two new candidates for admission will be welcomed and room made as opportunity offers. Some Members are not noting receipt to Secretary on arrival.

Duplicates.—Paphia, Valesina, Sibylla*, Polychloros*, Galatea (6), T. quercûs*, Betulæ*, Sororcula (6), Undulanus, Ziczac, Fuciformis, Meliloti, Cribrum (fair), Quadra, Uncula, Miniosa*, Subsequa, Moneta* (fair), Pruinata, Punctularia (7), Temerata (4), Syringaria*, Obscuraria, Extersaria (few), Lichenaria, Marginepunctata (5), Alternata* (few), Glabraria*, Dubitata*, Undulata*, Pictaria*, Cristana, Literana. *Desiderata.*—Numerous, especially Sesia, Acidalia, Emmelesia, Eupithecia.—*W. P. Blackburne-Maze, Shaw House, Newbury.*

Duplicates.—Lineola, Sibylla, Ægon, Semele, Io*, Rhamni*, Papilionaria*, Croceago*, Angularia*, Illustraria*, Tiliaria*, Autumnaria*, Elinguaria*, Syringaria*, Consortaria, Biundularia*, Rectilinea, etc., also ova P. populi, Plumigera, etc. *Desiderata.*—Adippe, Athalia, Davus, Pruni, Artaxerxes, Salmacis, Adonis, Paniscus, Æsculi, Ligniperda, Sylvanus, Velleda, Testudo, Exulans, Mundana, Pygmæola, Villica, Urticæ, Fascelina, Lanestris, Unguicula, Furcula, Fluctuosa, Diluta, etc. Early stages only for ova Plumigera. Perfect specimens only required.—*L. W. Newman, Bexley, Kent.*

Duplicates (taken in co. Waterford).—Brassicæ*, Napi, Rapæ, Cardamines, Sinapis, Edusa, Urticæ*, Io*, Atalanta*, Argiolus, Icarus, Egeria, Paphia, Tithonus, Hyperanthus, Semele, Populi*, Gothica (*vars.*), Cruda, Stabilis, Instabilis, Polyodon, Quadra*, Vinula, Menthastri, Antiqua, Hectus (*vars.*), Prunaria, Populata, Montanata, Dolobraria, Bilineata, Petraria, Atomaria. English: Polychloros*, Sibylla, Ligustri, Pinastri (2), Chrysidiformis*. *Desiderata.*—Exulans, Bicolorana, Cucullatella, Albulalis, Centonalis, Senex, Muscerda, Lutarella, Griseola, Deplana, Sericea, Sylvanus, Pyrina, Crataegi, Castrensis, Versicolora, Furcula, Bifida, Plumigera, Palpina, Camelina, Cucullina, Carmelita, Dromedarius, Trilophus, Trepida, Chaonia, Trimacula, Or, Duplaris, Fluctuosa, etc.—*(Rev.) W. W. Flemyng, Coolfin, Portlaw, Co. Waterford.*

Duplicates.—Large numbers of Exotic butterflies. *Desiderata.*—Exotic butterflies.—*(Rev.) W. W. Flemyng, Coolfin, Portlaw, Co. Waterford.*

Duplicates.—Ichneumoniformis, Porcellus, Irrorella, Saucia, Lunosa, Carpophaga, Capsincola, Cucubali, Trifolii, Dipoltana, Sinuana, Bilineatella, etc. *Desiderata.*—Ulvæ, Obsoleta, local Tortrices and Tineina, etc.—*A. C. Vine, 45, Temple Street, Brighton.*

Duplicates.—Elymi (4), Palpina (3), Unca, Fuscula, Cucubali, Ochracea*, Capsophila, Suasa* (4), Miniosa (4), Upsilon (3), Lutulenta (2), Leucophæa, Vespertaria ♂s, Mesomella (3), Rusticata, Trigeminata (6), Arion (3 pairs), Cæsia (4), Anomala, Orion* (2), Aprilina (6), Illustraria, Morpheus, Literosa, Duplaris (3 dark), [illegible], Lignata*; and many of last month's list. *Desiderata.*—Athalia, Pruni, Globulariæ, Myopiformis, Apiformis, Albulalis, Muscerda, Venosa, Straminea, Baja, Ulvæ, Flammea, Trifolii, Roboraria, Orbicularia, Auricoma, Myricæ, Cucullina, Petasitis, Pastinum, Chaonia, Testudo, Tæniata, Extersaria, Alni, Consignata, Plumbeolata, Bractea, Subsequa, Ridens, Griseata, Simulata, Helveticata, Rufata, Oo, Lunigera, Pyrophila, Orichalcea, Dipsacea, Melanopa, Cordigera, etc.—*T. Ashton Lofthouse, The Croft, Linthorpe, Middlesborough.*

Duplicates.—A large number of Anthrocera exulans (English set) from the Dauphiny Alps. *Desiderata.*—Offers (anything really useful).—*J. W. Tutt, 119, Westcombe Hill, S.E.*

Duplicates.—Erebia neoridas. *Desiderata.*—Continental butterflies (with data).—*J. W. Tutt, 119, Westcombe Hill, S.E.*

Duplicates.—Pupæ of Pisi, Bidentata, Lobulata, and Jacobææ. *Desiderata.*—Offers of ova, larvæ or pupæ.—*J. Carrick, 71, Raby Street, Gateshead-on-Tyne.*

Duplicates.—O. autumnata and ova.—*J. E. R. Allen, Portora, Enniskillen, Ireland.*

Duplicates.—Hera, Sinapis, Polychloros, Quercûs, Stellatarum, Geryon, Spartiata, Camelina, Dispar, Moneta, Valligera, Littoralis, Suffusa, Diluta, Pyramidea, Absinthii.—*Rev. J. S. Puckridge, Castlemartin Vicarage, Pembroke.*

Desiderata (good condition, with localities and dates).—Alexanor, Hospiton, Rumina (not from Riviera), Krueperi, Ergane, Chloridice, Belemia, Tagis (type), Gruneri, Damone, Pyrothoe, Eupheme, Chrysotheme, Myrmidone, Heldreichi, Nogelli, Ottomanus, Thetis, Thersamon, Telicanus, Balcanica, Fischeri, Trochilus, Pylaon, Bavius, Lysimon, Rhymnus, Psylorita, Pyrenaica, Anteros, Dolus, Coelestina, Celtis, Populi, Lucilla, Aceris, Xanthomelas, Vau-Album, Iduna, Maturna, Boetica, Arduinna, Trivia, Deione, Asteria, Aphirape (not Scandinavian), Thore, Frigga, Freija, Elisa, Alexandra, Laodice, Larissa, Pherusa, Melas (true), Anthe, Autonoë, Hippolyte, Neomyris, Roxelana, Clymene, Nurag, Œdipus, Hero, Leander, Thyrsis, Phryne, Nostradamus, Morpheus, Sylvius. A good pair (with data) would be very acceptable.—*J. W. Tutt, 119, Westcombe Hill, S.E.*

Duplicates.—Miniosa, Extersaria*, Variata*, Syringaria*, Elinguaria* (5), Obscuraria, Rubricosa, Fimbria*, Instabilis, Sibylla*, T. quercûs, Polychloros*, Paphia, Monacha*, Palumbaria*, Quadra* (6), Aprilina, Hyperanthus, Neglecta*, Rufina, Rhizolitha, Cinctaria (few), Valesina (5, fair), Pennaria (males), Cardui, Moneta* (4), Cervinaria* (7), Mi (9), Alveolus, Roboraria* (8), also pupæ of Undulata and Piniaria. *Desiderata.*—Numerous; also pupæ of many species.—*L. F. Hill, 2, Freelands Road, Bromley, Kent.*

Duplicates.—Fine E. extensaria*. *Desiderata.*—Fine Iris, Arion, Pruni, Bombyliiformis, Apiformis, Scoliiformis, Rubricollis, Testudo, Straminata, Degeneraria, Consignata, Irriguata, Jasioneata, Tæniata, Picata, Fluviata, Lapidata, Chaonia, Fluctuosa, Ocularis, Vitellina, Putrescens, Cannæ, Cinerea, Ashworthii, Atriplicis, Semibrunnea, Lychnitis, Peltigera, Armigera, Bractea, Bifida, Alpina, Nubeculosa, Venosa, Conspicillaris, Auricoma, Conformis, etc.—*E. A. Atmore, King's Lynn, Norfolk.*

Desiderata.—Quantity of healthy pupæ of A. rumicis for scientific experimental purposes:—Will any collectors who have any for exchange or sale kindly communicate with me, even a few acceptable.—*L. W. Newman, Bexley, Kent.*

Wanted.—British and European Tortricids, especially those species credited to both Europe and America in Meyrick's *Handbook* and Staudinger and Rebel's *Catalog*, pinned and set in English style acceptable. Will make liberal returns in any family of North American Lepidoptera named or other orders unnamed.—*W. D. Kearfott, 114, Liberty Street, New York City, U.S.A.*

Wanted Coleophorids.—As I wish to breed and record the life-history of all the species of *Coleophora*, I should be pleased to receive any cases and living larvæ which entomologists may meet with. I will do what I can in return.—*Hy. J. Turner, 98, Drakefell Road, St. Catherine's Park, New Cross, S.E.*

Wanted (to figure).—Examples of the following larvæ or pupæ: Antiopa, Lathonia, Daplidice, Edusa, Hyale, Livornica, Pinastri, Celerio, Gallii. Will any lepidopterist who collects abroad kindly remember my wants when opportunity occurs of obtaining any of them?—*J. C. Dollman, Hove House, Newton Grove, Bedford Park, W.*

Exchange.—I am desirous of obtaining butterflies from the Malayan Archipelago, and the Pacific Islands. For such I offer perfect diurnals from North and South America North American Coleoptera.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Wanted.—Erycinidæ of the world. Offer for same Diurni from United States.—*Levi W. Mengel, Boys' High School, Reading, Pa., U.S.A.*

Parasitical Diptera wanted.—Will lepidopterists who may breed any dipterous parasites from larvæ or pupæ kindly forward such as they do not require to me? If so I shall be greatly obliged.—*C. J. Wainwright, 2, Handsworth Wood Road, Handsworth, Staffs.*

Changes of Address.—*R. Tait, Esq., Roseneath, Harboro' Road, Ashton-on-Mersey, Cheshire. G. W. Kirkaldy, Department of Agriculture and Forestry, Honolulu, Hawaiian Islands. M. Burr, 12, Fitzjames Avenue, West Kensington.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W. 8 p.m. Annual Meeting, January 20th, 1904.

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m.

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m. Entrance Fee, 1s.; Annual Subscription, 1s.—Hon. Sec. G. H. Shaw, 45, Colworth Road, Leytonstone, N.E. January 4th, "Presidential Address." Excursion, January 3rd, Redhill to Purley, Cannon Street, 10.15.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. Meetings: January 14th, 1904, Report of the Field Meeting at Wendover, by Hy. J. Turner, F.E.S.; "Further Notes from Dawlish," by G. B. Browne and Hy. J. Turner, F.E.S. January 28th, Annual Meeting. February 11th, a paper, "Notes on the genus *Coleophora*," by A. Sich, F.E.S. February 25th, a Lantern lecture, "Notes and Photos." by F. Enock, F.L.S., F.E.S.

North London Natural History Society, Sigdon Road Board School, Dalston Lane, N.E. (close to Hackney Downs Stations, G.E.R.).—Meetings second and fourth Tuesdays in each month, at 7.45 p.m.

Carlisle Natural History Society.—Meetings held at Tullie House, Carlisle, 7.45 p.m.-9.30 p.m. Papers: January 21st, "Some rare Cumberland Beetles," F. H. Day, F.E.S. (with lantern).

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